AGENDA

COMMITTEE OF THE WHOLE WORKSHOP
BOARD OF COUNTY COMMISSIONERS

Board Chambers
Suite 100
Ernie Lee Magaha Government Building - First Floor
221 Palafox Place

May 14, 2020
9:00 a.m.

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1. Call to Order

   (PLEASE TURN YOUR CELL PHONE TO THE SILENCE OR OFF SETTING.)

2. Was the meeting properly advertised?

3. Waste Services Update
   (Pat Johnson/Chips Kirschenfeld - 45 min)
   A. Board Discussion
   B. Board Direction

4. Tiny Homes Guidance
   (Horace Jones/Tim Tolbert - 30 min)
   A. Board Discussion
   B. Board Direction

5. OLF-8 Master Plan Kickoff
   (Chips Kirschenfeld/Terri Berry - 30 min)
   A. Board Discussion
   B. Board Direction

6. Adjourn

Committee of the Whole **3.**

Meeting Date: 05/14/2020

Issue: Waste Services Update

From: Pat Johnson, Department Director

Information

Recommendation:

Waste Services Update
(Pat Johnson/Chips Kirschenfeld - 45 min)
A. Board Discussion
B. Board Direction

Attachments

Perdido Landfill Mining Project

ECUA Interlocal Agreement


PERDIDO LANDFILL MINING PROJECT: PHASE I COMPLETION REPORT

Prepared for:

Escambia County Division of Solid Waste Management

Prepared by:

Innovative Waste Consulting Services, LLC

Gainesville, FL, USA

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LIST OF ABBREVIATIONS, INITIALISMS, AND ACRONYMS

Contractor	Aero Training & Rental, Inc.
ECDSWM	*Escambia County Division of Solid Waste Management*
GCCS	*Gas collection and control system*
IWCS	*Innovative Waste Consulting Services, LLC*
Jones Edmunds	*Jones Edmunds & Associates, Inc.*
MSW	*Municipal Solid Waste*
NGVD	*National Geodetic Vertical Datum*
Reclaimed Soil	*Soil and fine materials that pass through the screen mesh*
RFP	*Request for proposal*
Screened Waste	*Waste that does not pass through the screen mesh*
Site	*Perdido Landfill, Escambia County, Florida*
yd^3	*Cubic yard*

EXECUTIVE SUMMARY

The Escambia County Division of Solid Waste Management (ECDSWM) owns and operates the Perdido Landfill, which contains both unlined and lined municipal solid waste (MSW) disposal areas and other waste management operations and facilities. Site-specific constraints limit ECDSWM's ability to expand the landfill into adjacent areas for future landfill operations. Additional site characteristics demonstrated the need to evaluate airspace expansion alternatives to increasing the site's lined footprint, including the following:

- The top elevation of the closed landfill cells (which encompass approximately 45 acres) is about 100 feet lower than the facility's permitted closure height.
- The side slopes of the closed landfill are less steep than those typically used in modern landfill operations.
- A pilot study showed that a substantial amount of soil was used in historical landfilling operations in the unlined area.
- The unlined area has been identified as a cause of groundwater impacts at the site (an issue that is currently being remediated).

In light of these factors, a landfill reclamation project was considered to recover landfill airspace, recover soil, reduce future groundwater impacts by removing the waste buried in the unlined area, and to optimize airspace use at the site. ECDSWM took a phased approach to evaluate the technical and economic feasibility of the reclamation project and based on the results of these evaluations decided to reclaim approximately 20 acres of the unlined cells. Approximately 485,120 in-place cubic yards of waste was mined from 16.9 acres in this project. The project cost was $3.09 million. Approximately 310,700 cubic yards of net airspace was recovered due to beneficial use of the reclaimed final cover soil and reclaimed soil as intermediate and daily cover soil, respectively, for the current landfill operations. The recovered airspace is worth more than $9 million at the current tipping fee and the compaction density at the site. This report presents ECDSWM's landfill reclamation project experience, including a summary of activities pertaining to reclamation operations, impacts to other landfill operations, reclamation rates achieved during the project, project costs and benefits, and recommendations for the next phase of the mining project.

1. Introduction

1.1 Overview

The Escambia County Division of Solid Waste Management (ECDSWM) decided to reclaim the old unlined cells at Perdido Landfill (site) in two phases to construct lined cells to meet the future disposal needs of the site. ECDSWM contracted Innovative Waste Consulting Services, LLC (IWCS) to manage the first phase of the project as well as to prepare a Request-for-Proposal (RFP) to select a qualified contractor to execute the first phase of the project. Approximately 17 acres of unlined cells were mined in Phase I of the project over a 25-month duration. Initially, the plan was to start Phase II of the project immediately following the conclusion of Phase I. However, because of the decline in the site's waste acceptance rate, the airspace currently available at the site and airspace that would be created with the construction of the lined cell in the area reclaimed from the Phase I mining project is enough to meet waste filling needs for the next 3 to 4 years. Phase II of the mining project is currently postponed until the need arises for the construction of additional lined cells.

1.2 Report Objectives

The objective of this report is to describe the project execution methodology and convey the lessons learned during contractor selection and execution of Phase I of the project, and identify modifications to the Phase I RFP for Phase II of the project; a copy of the RFP for the Phase I mining project is presented in Attachment A. The specific details of the Phase II mining area such as the existing and bottom grades would need to be incorporated to appropriately modify the Phase I RFP to seek proposals for the Phase II mining project.

1.3 Report Organization

This report is organized into six sections. Section 1 presents the project overview, report objectives and organization. Section 2 presents a description of the site and the project background. Section 3 presents a detailed description of the Phase I mining project. Section 4 presents data collected and lessons learned for the project. Section 5 presents a summary and recommendations for Phase II of the project. Section 6 provides a list of references cited in the report. Supplemental information is provided in a series of appendices.

2. Background

2.1 Site Description

This section describes the site in its current condition, with a focus on the unlined areas that would be the target of potential future full-scale mining activities. A series of site plans and drawings showing different site details is presented in Attachment B.

The Perdido Landfill is located in western Escambia County, Florida. The ECDSWM owns and operates the landfill. The site includes closed and active Class I landfill areas, an active Class III area, and other related waste management operations and facilities. From 1981 through part of 1990, Class I waste was disposed into approximately 45 acres of unlined landfill cells using a trench-and-fill disposal method. C&D debris was later disposed of in some portions of the lined area. Several lined landfill cells (Sections 1, 2A, 2B, 3A, 3B, 3C, and 4) were constructed contiguous to the unlined landfill area. Figures B-1 and B-3 in Attachment B present a layout of the site with a delineation of lined as well as unlined cells.

Waste is currently being placed in Section 4. Section 3C (14-acre cell) was almost filled to capacity well before the projected cell life because of increased disposal tonnages from hurricanes Ivan and Dennis in 2004 and 2005, respectively. Because of an unexpected increase in waste disposal rate at the site, ECDSWM began exploring reclamation of the site's unlined cells in 2006 to create space for the construction of future lined cells to accommodate the County's waste disposal needs. These newly-constructed lined cells were intended to begin waste acceptance subsequent to the completion of Section 4 filling.

2.2 Project Background

Landfill reclamation (also referred herein to as *landfill mining*) refers to the process of excavating MSW from a landfill (and the final cover soil, if any), screening the excavated MSW to recover soil and fine materials (referred to herein as *reclaimed soil*), and transportation and disposal of the screened MSW in the active lined cell. The unlined landfill area appeared to be an excellent candidate for landfill reclamation for the following reasons:

- The airspace above this area represented significant capacity for future waste disposal; the slopes were less steep than typically used in modern landfill operations; and the top elevation of these cells was 100 ft lower than the permitted elevation of the lined cells at the site. The reclamation of the unlined cells would increase the site's airspace utilization efficiency, thus prolonging the time before the ECDSWM must secure new disposal capacity.
- Landfill gas and leachate migration associated with these cells have resulted in groundwater impacts outside the footprint of the landfill area - remediation activities to address these issues are ongoing. The reclamation of these cells would reduce the future potential of environmental impacts and consequently reduce resources devoted to site remediation by removing the contamination source.

- The maintenance of this site area has been challenging because of leachate outbreaks (seeps) and differential settlement. The reclamation of these cells would reduce maintenance issues and cost associated with the seeps and settlement of these cells.
- The soil reclaimed by screening waste excavated from these cells would provide a source of cover soil for future disposal activities at the site, thereby reducing the cost associated with acquiring this material elsewhere.

TECHNICAL AND ECONOMIC FEASIBILITY ASSESSMENT

In 2006, ECDSWM contracted Jones Edmunds & Associates, Inc (Jones Edmunds), which sub-contracted IWCS, to conduct a detailed technical and economic feasibility assessment for reclaiming the unlined cells at the site. The study was conducted in multiple phases. In the first phase, IWCS conducted a desktop economic and technical feasibility analysis by collecting information from landfill reclamation projects conducted in the past. In the second phase, 39 boreholes were advanced to tag the waste bottom in the unlined area and eight test pits were excavated to collect site-specific waste composition data. The preliminary economic feasibility analysis was updated based on the data collected in the second phase. The key lessons learned from the first two phases of the evaluation are summarized as follows; details of this investigation can be found elsewhere (Jennings 2008; IWCS 2009) :

- The borehole data indicated that the historical topographic data available for the unlined cells provided reasonably accurate representations of the landfill bottom. Estimates indicated that approximately 1.5 million cubic yards (yd^3) of material (final cover soil and waste) in the unlined cells could be mined without any substantial mining of the Class III waste that is deposited over a portion of the unlined cells.
- The thickness of final cover soil, which was measured at the 39 borehole locations, ranged from about 0.5 ft to 13 ft and comprised about 30% of the total volume of the material present in the unlined areas.
- The soil/fines fraction of the bulk excavated material (which consisted of a mixture of soil and MSW) was estimated to be 24% of the volume (60% by weight) of the material excavated from the unlined cells (this excludes the final cover fraction). This volume of soil also does not include the soil contained in the berms that separate the trenches of waste in the lower portion of the unlined cells.
- Leachate seepage was observed in two of the eight test pits, suggesting that leachate seepage control may be an operational issue during full-scale mining.
- A waste screening evaluation suggested that a screen with an opening size between 1 and 3 inches would result in effective segregation of soil from the excavated waste material. Sufficient contact time between the material and the screen was observed to be critical for efficient soil separation.

In the third phase of the reclamation feasibility assessment, ECDSWM conducted a pilot-scale landfill mining project to confirm some of the findings of the previous investigations and to further evaluate site- and project-specific operational issues and costs. The waste excavation, screening, and transportation activities for the pilot project were performed by Aero Training & Rental, Inc. (Destin, Florida) between early June 2008 and mid-November 2008. Approximately 46,000 yd^3 of waste were excavated from a 2.6-acre section of unlined landfill cells located in the northeast corner of the unlined area. The details of this project are presented in IWCS (2009). The findings of the pilot-scale project are summarized as follows:

- Soil constituted approximately 70% (by volume) of the excavated material (this figure excludes the final cover soil that was initially removed before excavation).
- A trommel screen was found to be more effective and more efficient than a shaker screen in separating soil from waste materials.
- No hazardous waste or asbestos-containing material was encountered during the pilot-scale project.
- Wetting of the waste from rainfall negatively impacted screen performance and hindered movement of dump trucks in and out of the mining area.
- Waste screening was determined to be the rate-limiting step of the project.
- Waste shredding before screening did not significantly improve soil separation from the excavated waste.

Based on the findings of these evaluations, ECDSWM decided to reclaim the unlined cells in two phases.

3. Phase I Mining Project

3.1 Overview

ECDSWM submitted a permit application to the Florida Department of Environmental Protection for waste reclamation and construction of lined cells in the reclaimed area (prepared by HDR, Inc.). ECDSWM received the permit in early 2009. ECDSWM decided to implement the full-scale project in two phases. This section presents a detailed description of Phase I of the reclamation project, which was completed in the end of 2011 and which entailed the excavation of approximately 485,120 yd^3 of unlined landfill airspace (including MSW and final cover soil) from approximately 17 acres of unlined cells.

3.2 Bidding Process

ECDSWM contracted with IWCS to develop a RFP to solicit proposals from qualified contractors in late 2008 for Phase I of the mining project. Defining a detailed work scope was challenging because of unknowns such as the actual volumes of in-place waste and soil and whether dust, odor, and wind-blown litter would be operational issues. Also, it was not possible to estimate the frequency and volume of hazardous waste that may be encountered. To address these challenges, the RFP was structured using a combination of unit-prices and lump sum tasks in the contract. A unit price ($/in-place yd^3) was selected for tasks such as soil excavation, waste excavation and screening, and special waste handling, while a lump sum price was solicited for items such as mobilization, demobilization, and environmental controls (such as leachate and stormwater management, dust control, and litter control). In addition, a price quote was solicited for several contingencies such as the unit price for containing and transporting asbestos containing materials and hazardous waste, and excavating and transporting waste to the active cell at the site for disposal without screening.

Several performance criteria were also developed based on experience from the pilot mining project. The performance criteria specified 10% (by weight) as the maximum allowable soil content in the screened waste and 3 inches as the maximum screen opening size. The RFP was published in April 2009 and the contract with the winning bidder (Aero Training & Rental, Inc.) was finalized in September 2009. A copy of the RFP is presented in Attachment A. IWCS was contracted to manage the full-scale mining effort. Table 3-1 presents the line items and associated cost used for payment to the contractor.

Table 3-1. Lineitems Used for Payment to the Contractor and Associated Contracted Rates

Activity	Cost	Units
Transportation & stockpiling of the reclaimed soil recovered by waste screening	\$1.75	\$/in-place yd^3
Bermed soil excavation, transportation & stockpiling (without screening)	\$2.50	\$/in-place yd^3
Excavation, transportation & loading excavated waste onto screen	\$2.75	\$/in-place yd^3
Final cover soil excavation, transportation & stockpiling	\$2.90	\$/in-place yd^3
Waste Screening	\$2.90	\$/in-place yd^3
Transportation of the screened waste to the working face of the active lined cell	\$3.20	\$/in-place yd^3
Transportation & stockpiling of the reclaimed soil recovered by waste screening to active cell for daily cover	\$3.20	\$/in-place yd^3
Transport & spread out reclaimed soil over Sections 1-3c to recover waste and promote positive drainage	\$3.20	\$/in-place yd^3
Excavation & transportation of the excavated waste to the active lined cell (without screening)	\$4.72	\$/in-place yd^3
Hazardous waste spotting, sorting and transportation to an on-site containment pad supplied by the ECDSWM	\$5.00	\$/in-place yd^3
Regulated asbestos containing waste bagging & transportation to active lined cell	\$5.00	\$/in-place yd^3
Regulated asbestos containing waste spotting and sorting	\$7.25	\$/in-place yd^3
Prohibited waste spotting & sorting (excluding hazardous waste)	\$7.50	\$/in-place yd^3
Area restoration	\$1,950.00	Lump Sum
Litter control	\$2,000.00	Lump Sum
Leachate & stormwater runoff control	\$2,500.00	Lump Sum
Odor control	\$2,500.00	Lump Sum
Dust control	\$5,000.00	Lump Sum
Demobilization	\$5,000.00	Lump Sum
Maintenance of final cover stockpiles	\$25,000.00	Lump Sum
Maintenance of the reclaimed soil stockpile	\$25,000.00	Lump Sum
Mobilization/bonds/insurance	\$50,000.00	Lump Sum

3.3 Equipment and Labor Used

The contractor progressively mobilized four excavators, six 20-yd^3 articulated off-road trucks, two trommel screens, two dozers (CAT D6M), one tanker truck, and one fuel tank at the site for the project. Table 3-2 presents a list of the equipment and operators actively used for the mining project. All equipment except the screens had dedicated operators. The excavator operator that loaded waste onto the screen(s) supervised the screening operation. A full-time site supervisor was at the site throughout the project.

Table 3-2. Resources Used for the Project

Equipment	Equipment Make and Model	Number of Equipment/ Full-time Operators	Operation Description
Excavators	Caterpillar 325 DL/ 322 BL	1/1	Final cover soil and waste excavation and loading articulated dump trucks (while the Wildcat Trommel screen(s) was used) or directly loading the screen while the Doppstadt screen was used.
	Caterpillar 320 CL/ 325 BL	1/1	Feeding the excavated waste to the screen (while the Wildcat Trommel screen(s) was used as discussed later in this Section).
	Caterpillar 320 CL/ 325 BL	1/1	Moving and loading the screened waste and reclaimed soil into articulated dump trucks.
	Caterpillar 345	1/1	Used for waste excavation during waste relocation only.
Articulated dump trucks (6)	Caterpillar 725	2/2	Hauling excavated waste to the shredder/screen and for transporting the screened waste to the lined-cell for disposal. In May 2011, three 20-yd^3 capacity CAT trucks were replaced with CAT 740 trucks (with 33.5 yd^3 capacity) and were used until the end of the project. Only 4 trucks were used at a time.
	Caterpillar D300E	2/2	
	Caterpillar 740	2/2	
Dozer	Caterpillar D6M	2/1	Moving and stockpiling reclaimed soil and final cover soil and grading the site. Typically, only one dozer was used at a time.
Trommel screen	Wildcat Model 521 Cougar	1-2/0 (No dedicated operator)	Waste screening from January 2010 until August 2010. Only one screen was used until April 2010.
Trommel screen	Track-mounted Doppstadt SM 720K	1/0 (No dedicated operator)	Waste screening from September 2010 until the end of the project. A wheel-base version of this screen (SM 720) was used in parts of August and September 2010

3.4 Process Description

3.4.1 Final Cover Soil Excavation

The final cover soil was excavated and stockpiled near the mining area before starting waste excavation. The final cover was progressively removed during mining to minimize the exposed waste surface area. As shown in Figure 3-1, the final cover soil was excavated using an excavator (e.g., CAT 325 DL) and transported to the final cover soil stockpile using articulated off-road trucks. Approximately 12 inches of final cover soil was left in place to minimize the waste's exposure to rainfall and prevent or minimize any resulting leachate generation, and also to facilitate the movement of off-road trucks transporting screened waste and reclaimed soil from the mining area to Section 4.

Figure 3-1. Final Cover Soil Excavation and Transportation

The final cover soil stockpile (as shown in Figure 3-2) was located outside the landfill footprint on the southeast corner of the Phase I mining extents and was shaped (by the contractor) and vegetated (by the ECDSWM) to minimize soil erosion and soil loss. The final cover soil was used as intermediate soil for landfilling operations at the site.

Figure 3-2. Final Cover Soil Stockpile

3.4.2 Waste Excavation and Screening

Waste was initially excavated using a CAT 325 DL excavator and screened using a trommel screen equipped with 3-inch openings. A single wheel-base trommel (Wildcat Model 626 Cougar) was used for the first three months of the screening operation (January 2010 through March 2010). Similar to the pilot-scale project, waste screening was found to be the rate limiting step for the overall process rate because of frequent breakdowns of the screen. The contactor mobilized a second screen of the same make and model (Wildcat Model 626 Cougar) in April 2010 in order to increase the screening rate; however, IWCS engineers (during monthly site inspections) observed that typically only one screen was operating at a time.

The wheel-mounted trommel screens were located away from the waste excavation area in order to minimize screen movement. Waste was transported from the excavation area to the screen using 20 -yd^3 articulated off-road trucks. Figure 3-3 shows waste excavation and loading onto the articulated dump truck, and the location of the screens in relation to the excavation area. The off-road trucks dumped the excavated waste between the screens, as shown in Figure 3-4. An excavator (CAT 320 CL) located on a 15-to-20-ft waste pile between the screens loaded the excavated waste onto the screen(s), as shown in Figure 3-5.

Waste was excavated in 10-to-20-ft wide and 5-to-10-ft deep trenches aligned in the north-south direction. The trenches were started from north of the reclamation area and continued 200-500 ft towards the south. This waste excavation sequence results in exposed waste slopes with steep grading. However, the excavation locations were sequenced such that the depth of the vertical waste face does not exceed 10 ft. This approach to waste excavation results in 10-to-20-ft wide and 5-to-10-ft deep benches as shown in Figure 3-6. During this excavation process, berms of soil embedded in the waste were occasionally encountered. The bermed soil was excavated and stockpiled for use as daily cover.

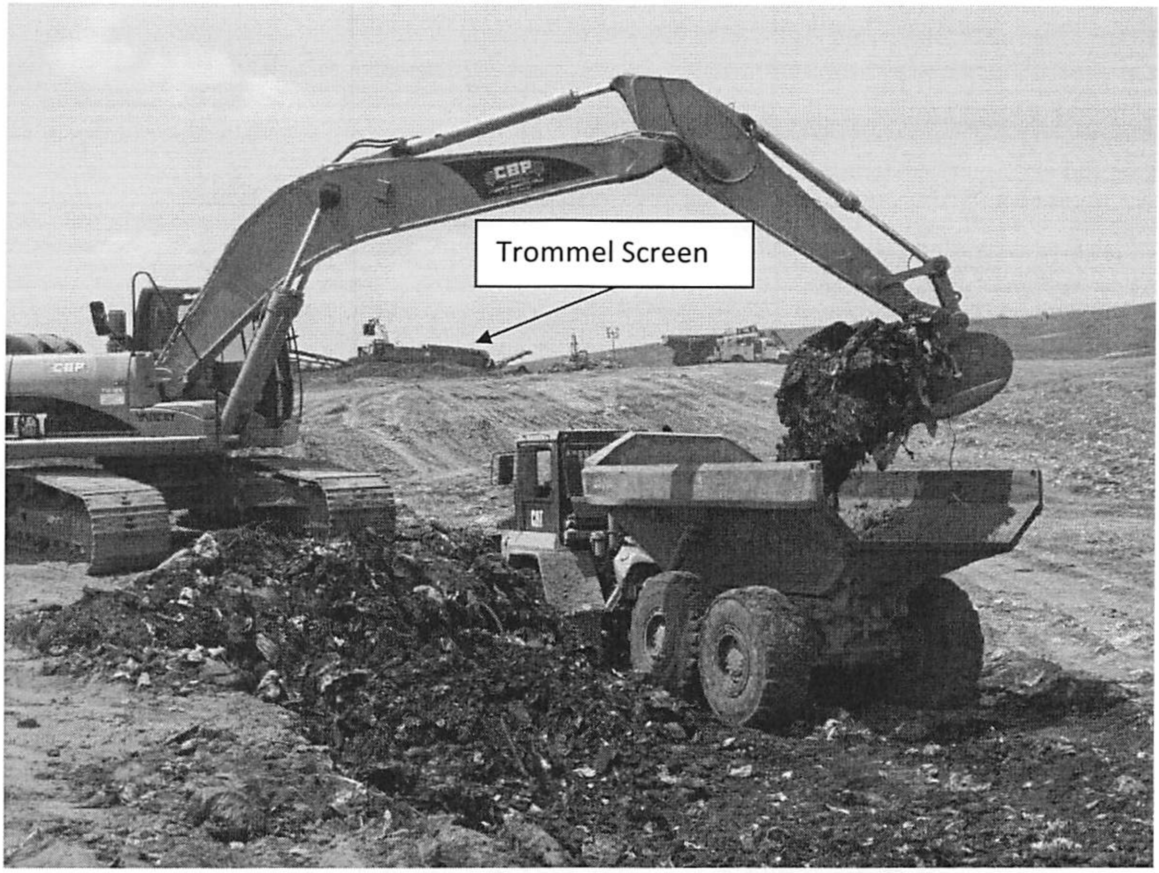


Figure 3-3. Waste Excavation and Transportation Operation

Figure 3-4. Stockpiling of the Excavated Waste between the Screens

Figure 3-5. Loading of the Excavated Waste onto Screens

Figure 3-6. Benches Resulting from Excavation Operation

Even with two Wildcat trommel screens, the screening rate still proved to be the limiting step in the mining operation due to frequent breakdowns. To further increase the screening rate, the screens were replaced with a different wheel-base trommel screen (Doppstadt SM 720) in August 2010. After evaluating the perfomance of this screen, a track-mounted version (Doppstadt SM 720K) was mobilized in September 2010 and used for the remainder of the project. This screen was located next to and moved with the excavators used for waste mining, an arrangment that eliminated transportation of the excavated waste. As this screen was track-mounted, it was easier to move than the wheel-base Wildcat screens. Figure 3-7 shows the locations of screens relative to the mining excavator.

Figure 3-7. Relative Positions of Various Equipment during Track-Mounted Screen Use

The screening process segregated the excavated waste was into two fractions: the fraction passing through the 3-inch screen (referred herein to as *reclaimed soil*) and the fraction retained on the screen (referred herein as *screened waste*). The reclaimed soil was temporarily stockpiled near the screen and then sent to Section 4 for use as daily cover. A mobile stacker was used to reduce the reclaimed soil handling and stockpiling and allowed the creation of a much larger reclaimed soil pile than what could be achieved with the screen alone (Figure 3-8).

The reclaimed soil production rate was usually adequate to meet the site's daily cover soil need. ECDSWM staff and IWCS engineers randomly conducted visual inspections of the screened waste quality to evaluate the soil content of the screened waste. In general, the soil content of the screned waste was visually estimated to be insignificant.

However, during a site visit in April 2010, IWCS engineers observed that the final cover soil was mixed with the underlying waste, excavated, and transported to the screen. The screening of clayey soil resulted in clumps of soil in the screened waste. The contractor was notified to take corrective action. In all subsequent visits, the soil content of the screened waste was visually found to be insignificant. The screened waste was disposed of in Section 4.

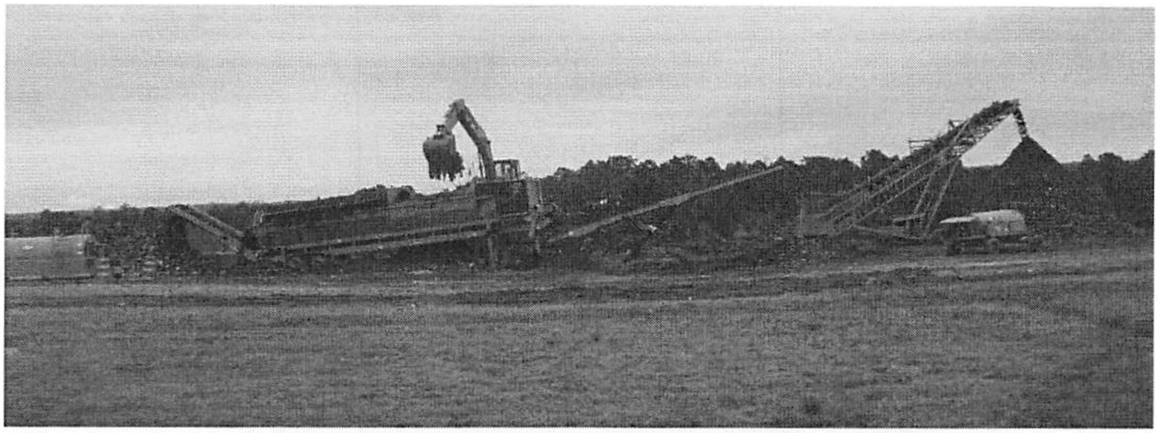


Figure 3-8. Use of a Stacker to Minimize Stockpile Handling

Figure 3-9 shows the unloading of screened waste in Section 4. Figure 3-10 shows stockpiling of reclaimed soil near the working face in Section 4 used as daily cover.

Figure 3-9. Unloading of Screened Waste at the Active Disposal Area

Figure 3-10. Stockpiling of Reclaimed Soil Near the Active Working Face for Use as Daily Cover

A portion of the primary road used to access the top of the lined cells at the site was deconstructed during Phase I mining activities. As a result, ECDSWM needed to regrade the western slope to construct a new access road. Screened waste was initially proposed as a fill material for this purpose, but because of the concern associated with the geotechnical stability of the screened waste (which primarily consisted of film plastic (by volume)), unscreened excavated waste was used instead. The waste excavated from May 9, 2011 through August 2, 2011 was deposited on the western slope of Sections 1 through 3C for construction of the access road. Figures 3-11 (a) and (b) show the unloading and spreading of the excavated waste on the western slope of the lined area. The ECDSWM compacted the waste using an in-house compactor.

The waste excavated from August 3, 2011 through August 24, 2011 was disposed of in Section 4; the excavated waste was not screened over this period because the screen was not available. A CAT 345 CL excavator was used to excavate the waste and two (2) 33.5-yd^3 articulated off-road trucks (CAT 740) were used for waste transport. The contractor mobilized the screen and resumed waste screening after August 24, 2011.

(a)

(b)

Figure 3-11. Excavated Waste (a) Unloading, and (b) Spreading on Western Slope of the Lined Cells

3.4.3 Environmental Controls

3.4.3.1 Prohibited Waste Management

One challenging aspect of mining operations was the management of whole waste tires, which were permitted for disposal when the cell was originally filled but are currently banned from disposal in Florida landfills. Therefore, excavated whole tires were separated from the screened waste, stored in a 40-yd^3 roll-off box or stockpiled, and eventually were transported to the on-site tire management area. Figure 3-12 shows the process of separating whole tires from screened waste.

Figure 3-12. Whole Tire Separation from Screened Waste

3.4.3.2 Suspicious Waste Management

Per the contract, the contractor was responsible for spotting waste that appeared to be hazardous or contained asbestos; however, no asbestos-containing material was encountered during the mining project. In August 2010, the contractor spotted a drum containing semi-solid resin-looking material, as shown in Figure 3-13. Upon notification, ECDSWM staff stored the material in the hazardous waste management building and removed a sample for laboratory analysis. The laboratory report suggested that the waste was not hazardous; a copy of the laboratory report is included in Attachment C.

Figure 3-13. A Picture of a Drum Encountered During the Waste Excavation Process

3.4.3.3 Dust, Litter, and Odor Control

The contractor took routine measurements of the excavation area's air quality (methane, carbon monoxide, hydrogen sulfide, and oxygen) and recorded the timing of these readings on daily reports (refer to Attachment D for daily reports). While odors were occasionally noted in the waste excavation and screening area, these were found to quickly dissipate with distance. On one occasion, an ECDSWM operator reported a strong odor from the screened waste spread in Section 4. On days when strong odors were reported from the screened waste spread in Section 4, the waste was stockpiled in the mining area longer than usual.

Dust from equipment movement on dry dirt roads was occasionally encountered. The contractor watered the roads as needed to control dust on those occasions when dust emissions resulted from equipment movement over dry dirt roads. The contractor deployed plastic mesh fencing around the mining area, especially during windy days, to control wind-blown litter, as shown in Figure 3-14.

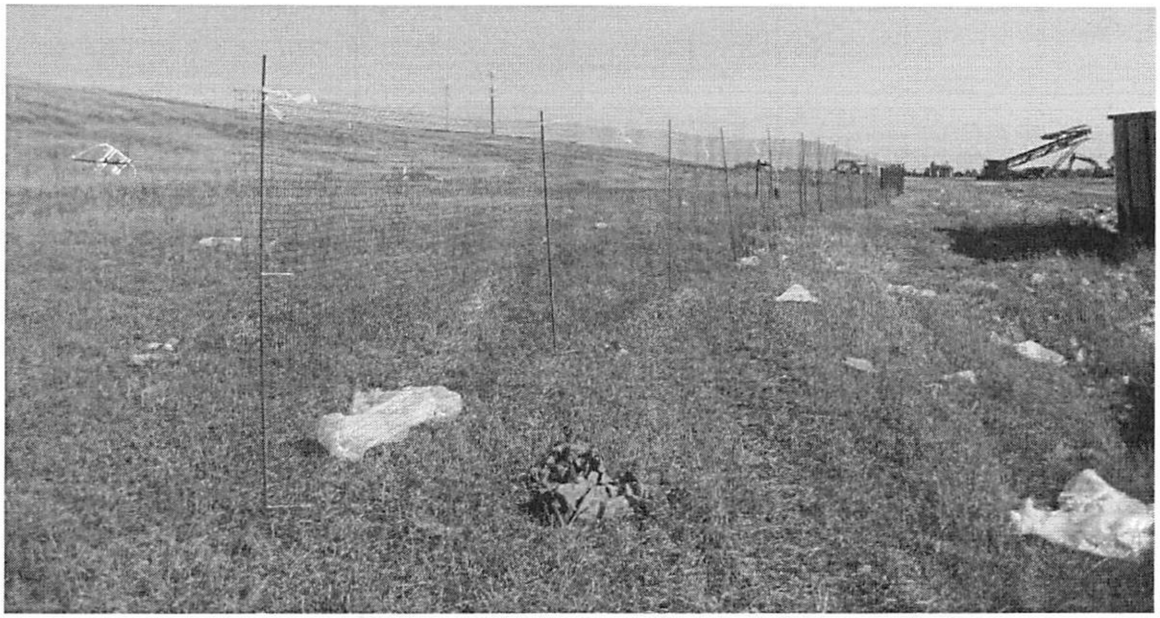


Figure 3-14. Litter Control Fence

3.4.3.4 Stormwater Run-off and Leachate Control

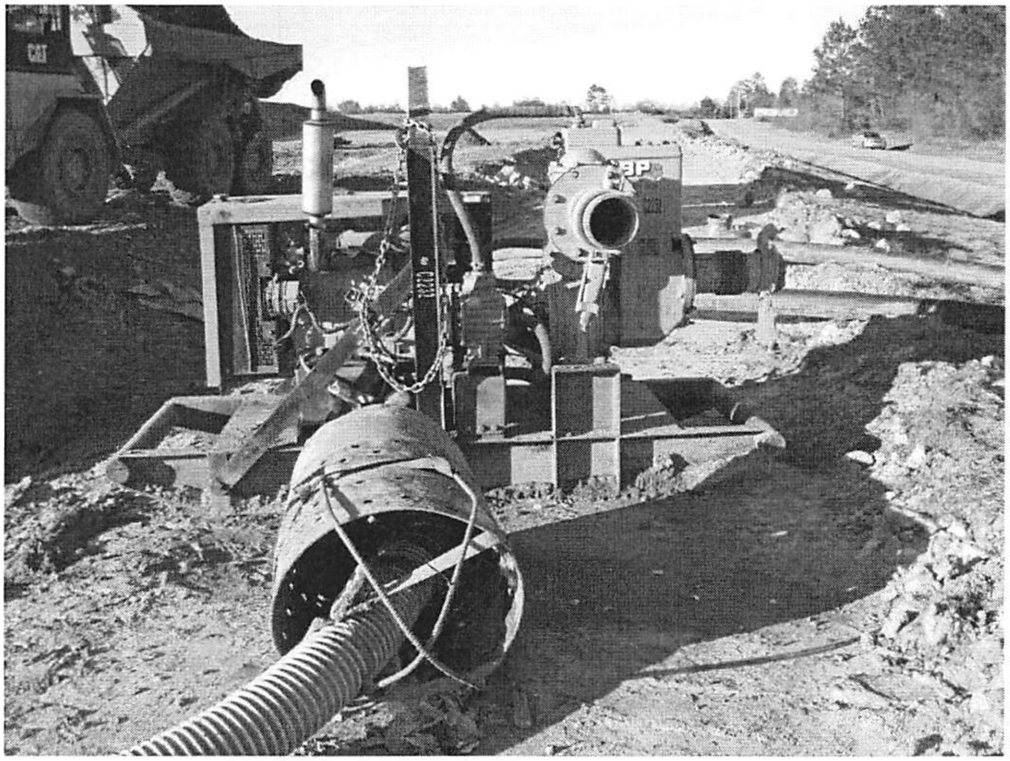
As described earlier, the final cover soil excavation was sequenced to minimize exposure of the waste to rainfall. Before an anticipated storm event, the exposed waste surfaces were covered with either a 6-inch soil layer or 6-mil polyethylene sheet to minimize exposed waste surfaces and limit the formation of leachate, as shown in Figure 3-15.

Figure 3-15. Covering the Exposed Waste Surfaces Before Anticipated Storm Events

A stormwater control berm was constructed on the eastern slope of the lined cell to divert the stormwater runoff from the lined cells away from the mining area. The berm was located approximately 50 ft west of the western edge of the mining extents. The stormwater runoff that came in contact with waste was managed as leachate and controlled using soil berms constructed around the mining area. Once captured, this portion of the stormwater runoff was pumped to a leachate wetwell. The stormwater that did not come in contact with waste was diverted to the stormwater channel located on the eastern side of the mining area via either pumping or gravity drainage using corrugated high density polyethylene culverts. Prior to October 2011 (before the mined area was stabilized with vegetation), the transport of sediments from the mined area was a major issue. During this period, clayey-silt sediment from the mining area was transported with the stormwater runoff to the stormwater pond located on the southeast corner of the unlined cells. The magnitude of sediment deposits was so great that a layer of clayey-silt formed that completely covered the drainage sand in the pond. Figure 3-16 shows a dried layer of clay/silt chips on top of the drainage media in the stormwater management pond.

Figure 3-16. Clay/Silt Layer Build-up in the Stormwater Pond

A high-flow-rate pump (shown in Figure 3-17(a)) was initially used to pump stormwater runoff from the mining area to the stormwater channel located on the eastern side of the mining area until it was determined to be one of the causes of sediment transport to the stormwater ponds. This pump was later replaced with a smaller one (as shown in Figure 3-17 (b)).



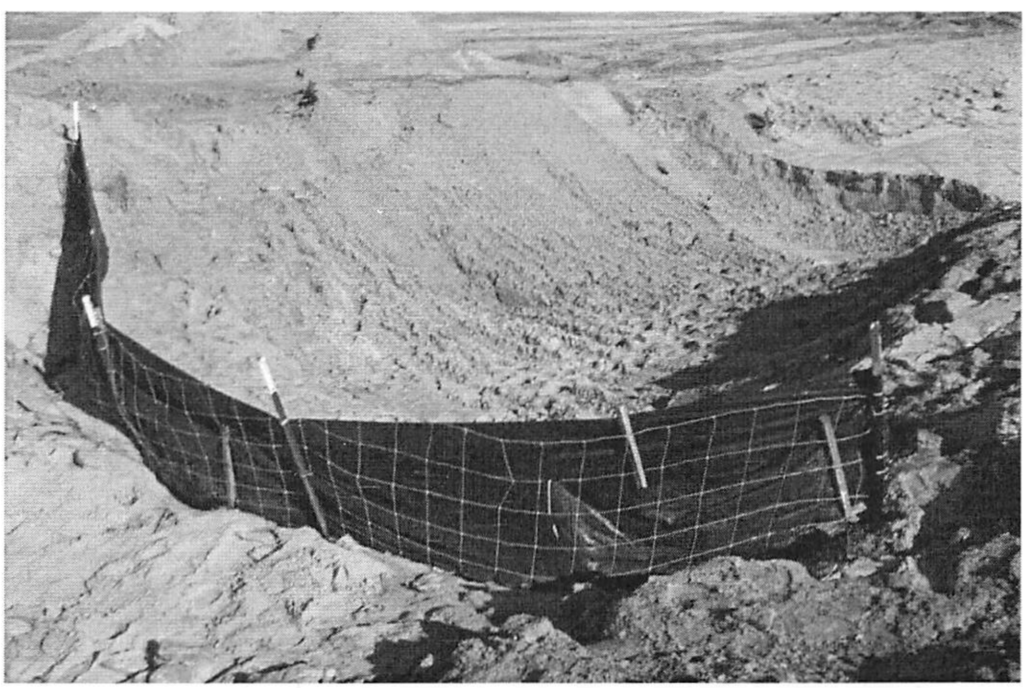
(a)

(b)

Figure 3-17. Pumps Used for Pumping Stormwater from the Mining Area to the Stormwater Channel

However, sediment transport from the mining area could not be controlled even with the use of the smaller pump. The necessity of transporting stormwater by pumping was minimized by grading the area for gravity drainage. Additional measures such as the deployment of hay bales and silt fences in the stormwater flow path were implemented to capture suspended sediments, as shown in Figures 3-17 (a) and (b).

(a)



(b)

Figure 3-18. Sediment Control Measures (a) Hay Bales, and (b) Silt Fences

3.4.4 Area Restoration

The final exposed waste surfaces were covered with 18 inches of soil. The final cover soil excavated from the mining area was used for this purpose. The finished grades were vegetated by blowing hay. Figure 3-19 shows the tractor and attachment used for blowing hay over the finished grades.

Figure 3-19. Tractor and Attachment Used for Applying Hay over the Reclaimed Area

4. Data Gathered and Lessons Learned

4.1 Daily Reports

IWCS provided a daily report template for daily completion by the contractor. The contractor recorded information such as weather conditions and daily truckload numbers of different materials transported out of the mining area and submitted these reports to ECDSWM staff for verification and approval. The contractor also provided the daily reports to IWCS at the end of each calendar month. A copy of all the daily reports is presented in Attachment D. Figure 4-1 presents a distribution of the cumulative number of truckloads of the different materials transported out of the mining area over the course of the project. The figure depicts that transported materials included final cover soil, screened waste (fraction of the waste that was retained on the screen), reclaimed soil (the fraction of the excavated waste that passed through the screen), whole tires, bermed soil (soil banks that were found during excavation), and waste directly hauled to lined cells.

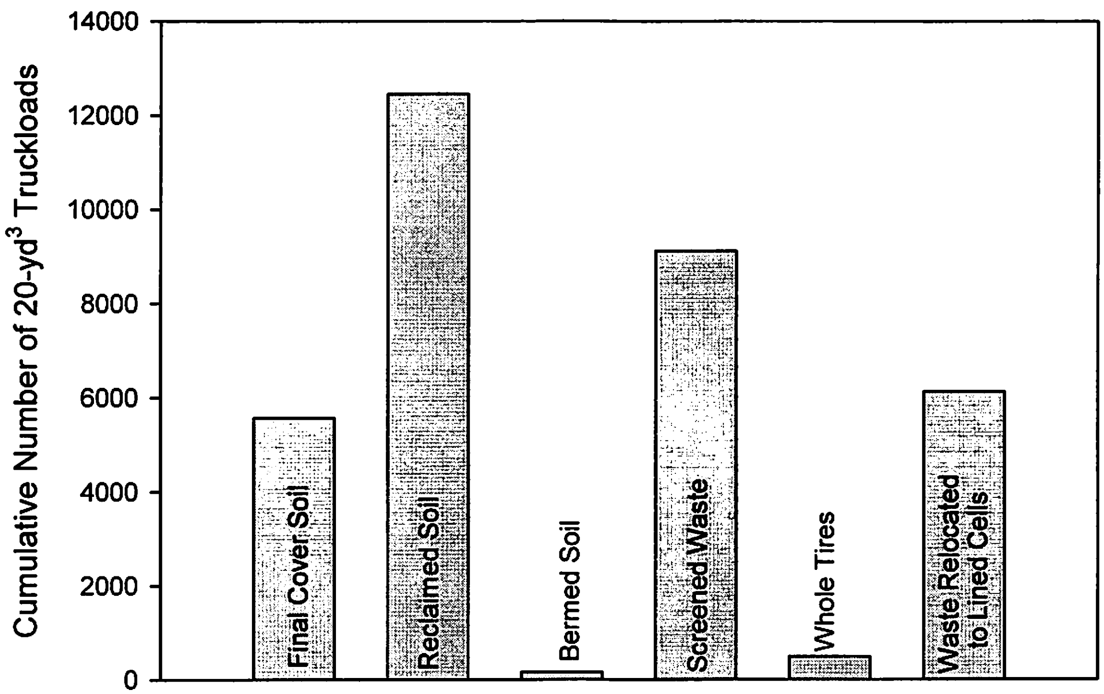


Figure 4-1. Cumulative Number of Truckloads of Different Mined Constituents

The excavated waste, screened waste, and reclaimed soil truckload numbers from July 20, 2011 through the end of the project were multiplied by the ratio of 33.5:20 as these materials were transported using 33.5-yd^3 tailgate heaped capacity off-road articulated dump trucks (CAT 740) over this period, whereas 20-yd^3 trucks were used for the rest of the project duration. Whole tires were transported using 20-yd^3 trucks over the entire project. Note that the contractor did not take due care in segregating the final cover soil from the excavated waste and tracking the final cover soil truckload numbers accurately until April 23, 2010; during a monthly site visits on April 23, 2010, IWCS noticed that final cover soil was mixed with the waste below before being excavated and processed as waste. While this practice occurred, excavated final cover soil was mostly quantified as reclaimed soil. As a result, the final cover soil truckload number presented in Figure 4-1 is underestimated and the reclaimed soil truckloads are overestimated.

4.2 Routine Topographic Surveys and Overall In-place Volume Estimation

ECDSWM contracted Pittman Glaze and Associates, Inc. to survey the mining area on a routine basis. The survey frequency was decided by IWCS based on the volume of work conducted over the project's duration. A copy of all the topographic surveys is included in Attachment B. In an effort to better understand the progression of mining activities, IWCS used AutoCAD Civil 3D 2012 to create cross-sections of the mined area showing the progression of the mining face over the course of the project. An aerial view of the original (post pilot-scale) April 2009 mining surface showing the cell boundaries, original estimated mining extents, and the cross-section cut lines is included as Attachment B. This attachment also includes the individual cross-sections showing the movement of the mining face over time.

The periodic in-place volume of mined waste was also estimated using AutoCAD Civil 3D 2012. It should also be noted that 18-inch intermediate cover had been applied to restore the exposed waste surface before the survey was conducted. The intermediate cover soil volume was multiplying the horizontally project area of the slopes covered with the intermediate soil depth of 18 inches. The intermediate cover volume was added to the survey in-place volume to estimates the in-place mined airspace.

The estimated cumulative in-place volume mined up until each survey event, as well as the period of in-place volume mined between each survey and its comparison surface, are detailed below in Table 4-1; approximately 485,120 yd^3 of airspace was mined during the Phase I mining project.

Table 4-1. Cumulative and Period In-place Volumes Mined

Survey Date(s)	Comparison Survey Date(s)	Volume Mined (yd³)	
		Between the Survey and Comparison Survey Dates	Until the Survey Date
31 March - 1 April 2010	April 2009	34,075	34,075
29 - 30 June 2010	April 2009	79,617	79,617
2 - 3 September 2010	April 2009	130,300	130,300
30 September 2010	April 2009	178,560	178,560
1 - 2 December 2010	30 September 2010	48,870	227,430
30 - 31 March 2011	30 September 2010	136,850	315,410
9 May 2011	30-31 March 2011	23,220	338,630
1 - 2 August 2011	30-31 March 2011	99,270	414,680
24 August 2011	1-2 August 2011	28,540	443,220
1 - 7 November 2011	24 August 2011	41,900	485,120

4.3 In-place Volume Estimates for Materials Mined

4.3.1 Overview

The volumes listed in Table 4-1 represent both the final cover soil and excavated waste volume; an estimation of the in-place volume of these individual components was necessary for the contractor to bill ECDSWM for the reclamation activities as listed in Table 3-1. This section describes the methodology used to estimate the volume of different constituents of the materials mined.

4.3.2 Final Cover Soil Volume Estimation

The approach outlined in the RFP called for surveying site topographic conditions before and after excavation of the final cover soil in order to estimate the total in-place final cover soil volume. The approach would have resulted in a relatively high survey cost and would have hampered the waste excavation process as the soil-waste interface would have needed surveying prior to waste excavation in that area. The contractor and the ECDSWM agreed to estimate the in-place volume of the final cover soil by excavating 35 test pits and measuring the soil depth across the Phase I reclamation area before starting the project. Each test pit was approximately 10 ft × 5 ft in size and the excavation was advanced until waste was encountered. The average depth of the final cover in the mining area was determined to be approximately 6.7 ft. A map showing the approximate locations of these test pits is presented in Attachment B.

Some of the test pits were outside the ultimate extents of the Phase I mining area; these were excluded from the average final cover soil depth estimation and the average depth of the final cover soil for the test pits within the mined area was estimated to be 6.8 ft. The in-place volume of the final cover soil excavated, transported, and stockpiled over a pay period is estimated by multiplying the average final cover soil depth by the final cover soil excavation area of the pay period. Final cover soil was mined from approximately 16.9 acres. However, approximately 2.6 acres of the excavation area were the slopes resulting from the pilot mining project. This area was graded with a 2-ft final cover at the completion of the pilot project. Therefore, the final cover soil volume was estimated assuming a 2-ft soil depth over 2.6 acres and a 6.8-ft soil depth over 14.3 acres (=16.9-2.6). The total final cover soil volume excavated was estimated to be 165,280 yd^3. Figure 4-2 presents the temporal variation of cumulative mined total material and final cover soil (in-place) volumes.

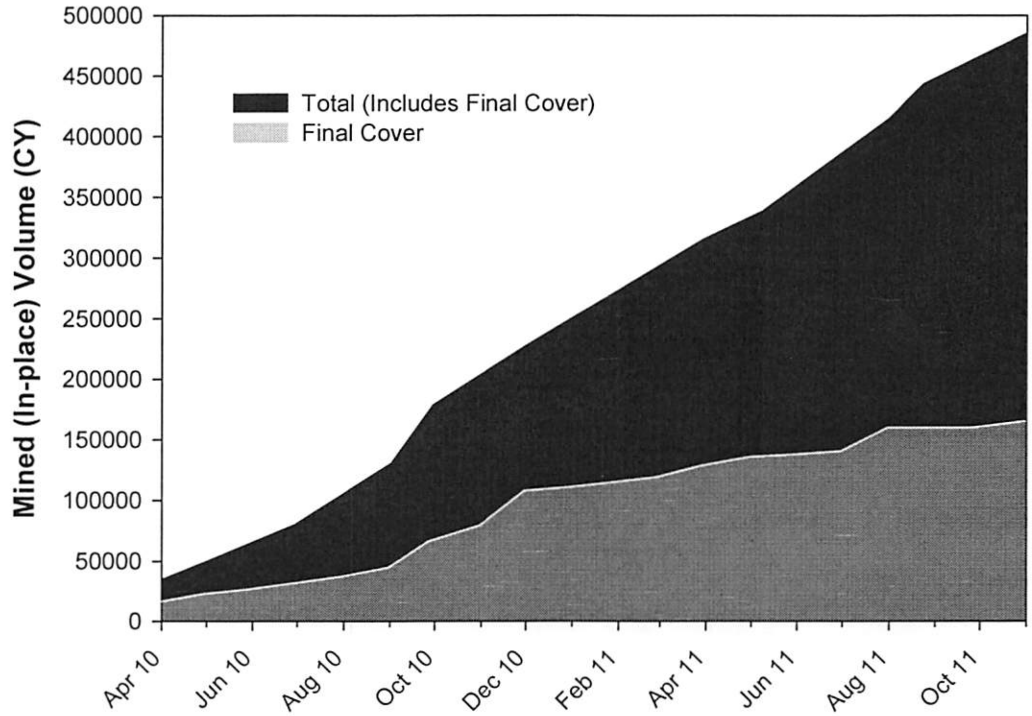


Figure 4-2. Cumulative Mined In-place Total Airspace and Final Cover Volumes

4.3.3 Waste Material Volume Estimations

The in-place volume of mined waste material was calculated by subtracting the estimated in-place final cover soil volume from the overall mined in-place volume (estimated based on routine topographic surveys). An estimate of the mined in-place volume of different constituents of excavated waste (screened waste, reclaimed soil, regulated asbestos containing material, prohibited waste, and hazardous waste) was needed for billing purposes. The waste composition was estimated based on the truckload counts of different waste materials transported from the reclamation area. Assuming that all the components of excavated materials (e.g., soil, waste, tires) undergo equal expansion upon excavation, the proportions of truckload counts provide an estimate of the excavated waste composition (by volume). The in-place volume of individual constituents was estimated by multiplying the fraction of that constituent by the mined in-place volume of the waste materials.

Table 4-2. In-place Volume of Different Waste Materials Mined During the Project

Constituent	In-Place Volume Mined over the Project Duration (yd^3)
Screened Waste	98,733
Reclaimed Soil	134,735
Whole Tires	6,035
Bermed Soil	1,642
Excavated Waste Deposited in Lined Cells without Screening	78,695
Total	319,840

Based on the overall in-place volumes presented above, approximately 319,840 in-place yd^3 of waste materials consisted of screened waste, reclaimed whole tires, and bermed soil; the waste that was relocated to lined cells without screening was excavated. Table 4-2 presents in-place volumes of different waste materials excavated during the project.

The in-place volume of the screened waste and the reclaimed soil were added to estimate the excavated waste transportation and screening cost. Figure 4-3 presents the distribution of various constituents (including the final cover soil) of the materials mined from the unlined cells. It can be seen that the combination of final cover soil, reclaimed soil, and bermed soil represents approximately 62% of the airspace mined, which is equivalent to nearly 301,700 yd^3 of airspace. The use of the final cover soil and reclaimed soil as intermediate and daily cover soil in Section 4 precluded the use of materials from outside the existing landfill footprint (such as virgin soil or ash from International Paper) as daily and intermediate covers. Therefore, the recovery and beneficial use of the final cover soil, bermed soil, and reclaimed soil resulted in a savings of approximately 301,700 yd^3 of lined airspace. This airspace is valued at over $9 million, since at the current waste density and tipping fee, the value of airspace at the site is approximately $30 per yd^3.

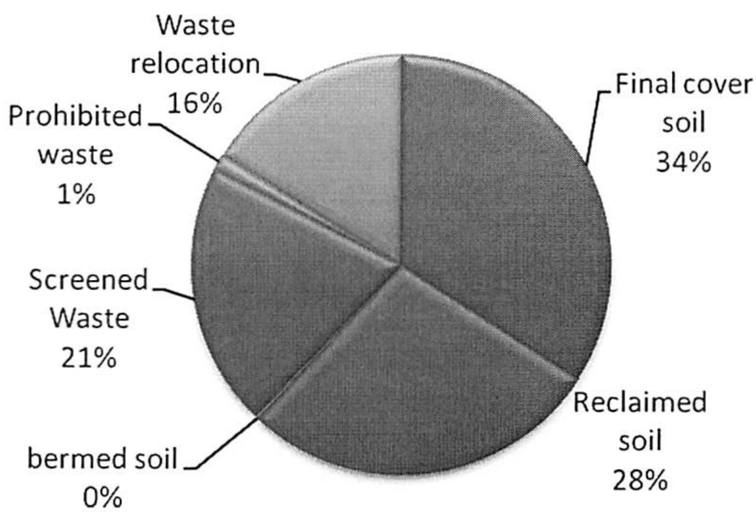


Figure 4-3. Distribution of Various Constituents of the Mined Material

4.4 Project Cost Controls

IWCS estimated in-place volumes based on the routine topographic surveys and provided those to the contractor. The contractor submitted pay applications on a monthly basis based on the material volume numbers provided by IWCS. It should be noted that topographic surveys were not conducted every month. For the months when a topographic survey was not conducted, IWCS estimated the in-place volumes using contractor daily report truckload information and an assumed (in-place) volume that a truckload is expected transport. The contractor submitted daily reports for each at the end of each month. The truckload volumes ranged from 9 to 17 yd^3 per truckload and varied by constituent and month.

The in-place volumes estimated based on truckload numbers were adjusted to match those estimated from topographic survey data. Therefore, the truckload volume did not have any impact on the in-place volume estimate used for billing purposes and the project cost. For example, a topographic survey was not conducted at the end of October 2010 to estimate the in-place volume of landfill mined during this month. The truckload numbers along with unit truckload volume (yd^3 per truckload) were used to estimate the volume mined (referred herein as to V_1) and this volume was provided to the contractor for invoicing for the work performed in October 2010. A topographic survey was conducted on December 1-2, 2010. This topographic map was compared with that based on a September 30, 2010 survey to estimate the volume mined from 1 October 2010 through 30 November 2010 (referred herein as to V_2). The volume mined for November 2010 was calculated by subtracting V_1 from V_2. With this approach the amount paid to the contractor for the work performed from 1 October 2010 through 30

November 2010 was based on the in-place volume estimated based on topographic survey data and was independent of the truckload volumes used for payment for work performed in October 2010. Figure 4-4 presents the monthly amount invoiced by the contractor for each month.

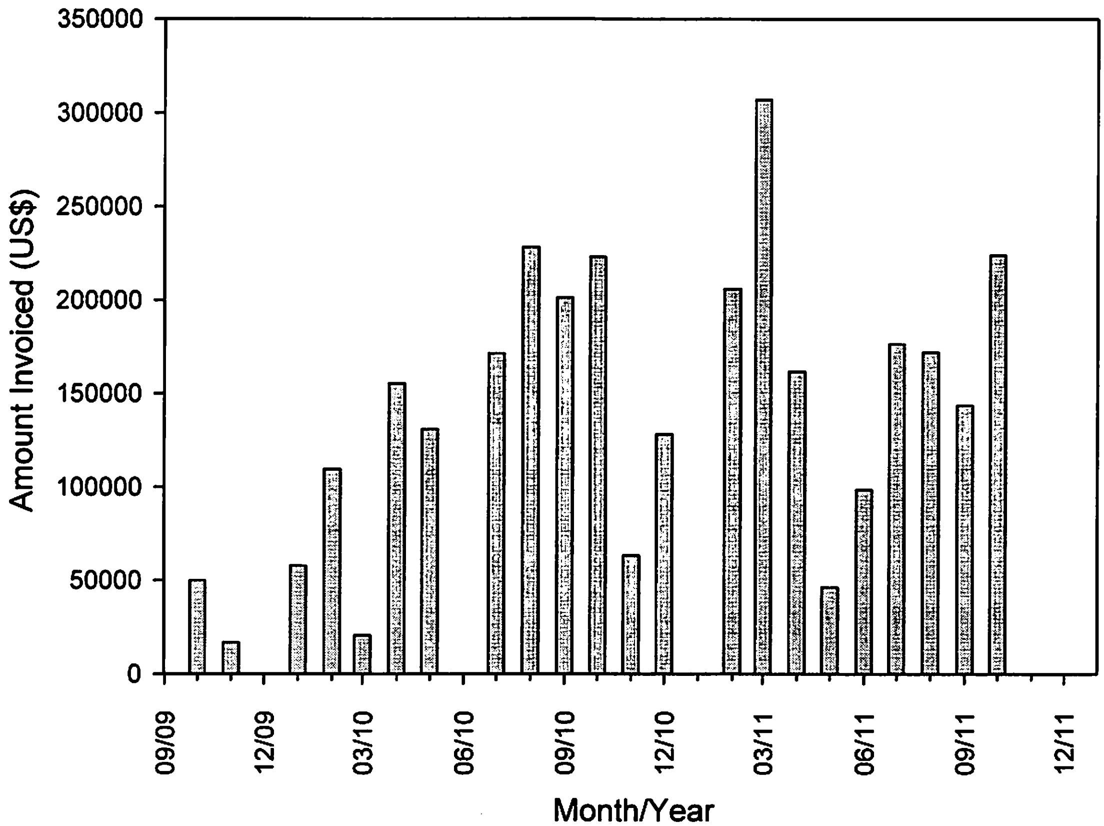


Figure 4-4. Amounts Invoiced by the Contractor

4.5 Project Cost and Benefits

The overall project cost was \$3.09 million. Based on the overall volume mined in Phase I (485,120 in-place yd^3), the mining cost was estimated to be \$6.37 per in-place yd^3 airspace. As described earlier, the project resulted in reclamation of a net 301,700 yd^3 of airspace, which is worth over \$9 million at the current tipping fee and compaction density. The gross monetary benefit of the project is estimated to be approximately \$6 million. The net benefit will be lower than \$6 million as a part of the tipping fee is used to cover the cost of compacting waste in the reclaimed airspace.

Other costs associated with waste disposal in a lined cell include containment system construction (liner and cap construction plus landfill gas collection system construction and operation), and post-closure care; these would be incurred for the future waste disposal irrespective of whether future lined cells were constructed through unlined cell mining.

4.6 Mining Processes and Associated Production Rates

As described earlier, a series of modifications were made to the mining operations in order to increase the mining rate and to address other site operational needs (e.g., relocation of the excavated waste without screening to construct the new access road on the western slope). IWCS estimated the production rate for the various mining approaches implemented at the site. Table 4-3 presents the major modifications in the process, the associated timeline, and the estimated mining (or production) rate. The average daily reclamation rate for December 2009- March 2010 was estimated to be approximately 550 in-place yd^3 per day. The average daily reclamation rate has been lower than anticipated primarily because of higher-than-average rainfall since the start of the project and frequent screen breakdowns. As can be seen, the mining rate increased with the deployment of the second Wildcat screen in April 2010.

Table 4-3. Mining Processes and Associated Mining Rates

Time Period	Process Description	Operating Days	Total Volume Mined (in-place yd^3)	Mining Rate (in-place yd^3 per day)
December 2009 – March 31, 2010	Waste screening using a single wheel-mounted screen (Wildcat Model 626 Cougar)	62	34,075	550
April 1, 2010-June 30, 2010	Waste screening using two wheel-mounted screen (Wildcat Model 626 Cougar)	64	45,542	710
July 1, 2010 - August 31, 2010	Waste screening using a single wheel-mounted screen (Doppstadt Model SM-720)	45	50,683	1,130
September 1, 2010 – May 9, 2011	Waste screening using a single track-mounted screen (Doppstadt Model SM-720K)	153	208,330	1,360
May 9, 2011- August 24, 2011	Waste relocations without screening	67	104,590	1,560
August 25, 2011- October 31, 2011	Waste screening using a single track-mounted screen (Doppstadt Model SM-720K)	38	41,900	1,100

As described earlier, the two Wildcat screens were replaced with a single Doppstadt in August 2010. A significantly higher mining rate following this replacement suggests that the mining rate realized with use of the Doppstadt was significantly greater than that of the Wildcat screen. Waste was solely screened using a single Doppstadt from 1

September 2010 through 9 May 2011 and from 25 August 2011 through 31 October 2011. It should be noted that the mining rate presented in Table 4-3 is a combination of the final cover soil and waste mining rate. The mining rate achieved from 1 September 2010 through 9 May 2011 is approximately 20% greater than that achieved from 25 August 2011 through 31 October 2011. This is primarily a result of a greater volume of mined final cover soil (which was easier to excavate than the waste) excavated during the 1 September 2010 - 9 May 2011 period. An insignificant amount of final cover soil was excavated during the 25 August 2011 - 31 October 2011 period; the estimated mining rate for this period (1,100 in-place yd^3) is representative of the landfill waste excavation and screening rate using the resources described in Section 3.2. The fact that the waste mining rate during waste relocation was significantly greater than that achieved when waste was screened before disposal suggests that waste screening was the rate-limiting step in the overall mining process.

4.7 Swell Factor Estimation

As expected, the waste expanded upon excavation due to the introduction of air into the materials and the decompression of elastic materials that are no longer under a load. The swell factor, defined as the ratio of the loose volume (the volume upon excavation) to the in-place volume (also known as the bank volume) of waste is a key parameter in estimating the waste transportation cost. IWCS estimated the waste swell factor using the truckload numbers and the in-place volume mined from 25 August 2011 through 31 October 2011; as no bermed soil or final cover soil was mined and transported over this period, the in-place volume estimated using the topographic survey data is strictly associated with waste mining activities.

The loose volume was estimated by multiplying the truckload numbers for screened waste and reclaimed soil, bermed soil, and whole tires (hauled from 25 August 2011 through 31 October 2011) with the manufacturer-specified maximum capacity (tailgate heaped for CAT 740 of 33.5 yd^3 for the reclaimed soil and the screened waste, and the tailgate heaped volume for CAT 725 of 20 yd^3 for the whole tires and bermed soil). The loose volume was calculated to be 64,113 loose yd^3. The in-place volume mined over the same period was estimated to be 41,900 in-place yd^3. Therefore, the waste swell factor was estimated to be approximately 1.53.

The swell factor for the final cover soil was estimated using the data collected over September 2010, when the mining contractor removed the final cover soil from an approximately 2.8-acre area of the unlined cells and specifically recorded the truckload numbers associated with this activity. The area was surveyed before and after final cover soil excavation. The in-place volume was estimated to be 29,075 yd^3. The loose volume was estimated by multiplying the truckload numbers for the final cover soil (hauled from 1 September 2010 through 30 September 2010) with the manufacturer-specified maximum capacity (tailgate heaped for CAT 725) of 20 yd^3. The loose volume was calculated to be 31,240 loose yd^3. Therefore, the final cover swell factor was estimated to be approximately 1.07.

The ECDSWM should consider specifying these swell factors for estimating the in-place volumes based on truckload numbers for the months when a survey is not conducted for Phase II of the mining project.

4.8 Quality Assurance/Quality Control

IWCS conducted multiple quality control checks to ensure that the in-place volumes used for project billing were accurate. This section describes these checks. The first check was conducted to assess whether the in-place volume estimated using AutoCAD Civil 3D was reasonable. Cross-sections showing the most recent topographic surface and the comparison surface were plotted at 50-foot intervals to estimate the area between the currently surveyed surface and the previously surveyed surface. Each of these areas was then multiplied by 50 ft and all the volumes were summed together to compare to the total volume calculated by AutoCAD Civil 3D. This estimate was also conducted to approximate the volume between the pre- and post-mining surfaces and the estimate was compared with the sum of all the previous estimates. The manual estimates were ±15% of the volume provided by AutoCAD Civil 3D. The contractor independently estimated the in-place volumes using survey data for some of the survey events. The contractor's and IWCS estimates were within 5%. In general, IWCS estimates were lower than the contractor's estimates (though IWCS estimates were used for billing purposes). Therefore, the volumes provide by AutoCAD Civil 3D were concluded to be reasonable.

The second check pertained to ensuring that the contractor did not excavate below the actual landfill bottom; any soil excavation below the actual waste bottom would have been counted and billed as waste excavation and thus would have resulted in a project cost increase. The finished bottom grades were compared with the historic hand-drawn topographic conditions before filling activities commenced in the unlined cells. The comparison suggested that the finished grades were on an average 7 ft lower than the historic topographic conditions. The actual landfill bottom would be expected to settle as a result of overburden pressure and is expected to be lower than the historic topographic conditions. The ECDSWM staff indicated that the native soil was excavated before depositing waste in unlined cells. Therefore, the difference between the finished grades and the historic topographic conditions could not be used to assess whether the contractor performed excavation below the true landfill bottom.

As described earlier, a total of 39 boreholes were advanced into the unlined portion of the site in February and March of 2007 in order to determine the waste depth in the unlined cells and verify the accuracy of the historic topographic map. Seven of these boreholes were in the area mined in this project. The waste depth mined was estimated at these seven borehole locations by comparing the post-mining topographic conditions with the April 2009 (pre-mining) topographic conditions. **Error! Reference source not found.** presents a box-and-whisker plot showing the distribution of depths excavated during the mining project, those measured at the seven borehole locations, and those estimated based on the historic topographic map. It can be seen that the excavated depths were comparable to those estimated based on boreholes, suggesting that the contractor performed excavation up to the actual waste bottom. Moreover, visual observations of the cross-section of landfill near the active excavation area during routine site inspections conducted by IWCS engineers did not indicate any signs of excavation below the actual waste bottom.

An additional analysis was performed by IWCS in order to verify that the contractor did not mine below the waste bottom surface established in previous mining events. The contours from each survey's bottom surface expansion area were used to make a composite surface for comparison against the contours of the bottom surface area from the final survey. The comparison suggested that bottom grading plan did not change more than 2 in. over time.

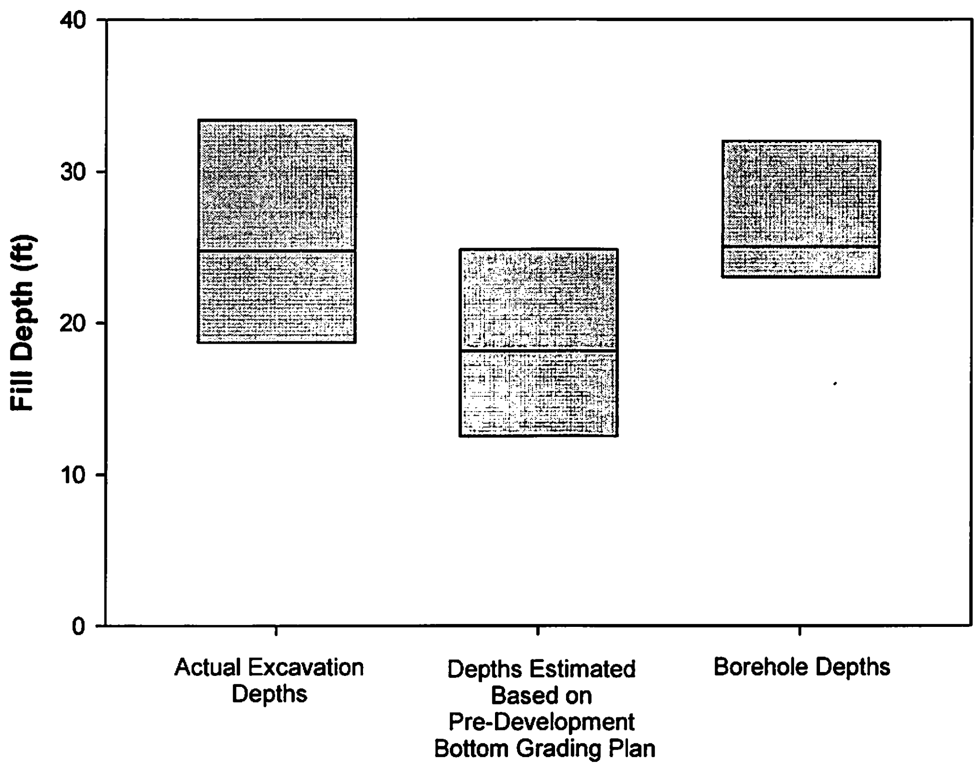


Figure 4-5. Plot of Actual Excavation Depth vs. Borehole and Estimated Bottom Surface Depths

A third check was done to confirm that the exposed waste surface area was covered with 18 inches of soil. Once budgeted mining activities were completed, the contractor was required to place at least 18 inches of intermediate cover soil on the western and southern side slopes of the full-scale mining excavation area, covering approximately 2.9 acres. IWCS visited the site on 27 October 2011 and advanced 33 boreholes into the intermediate cover soil in order to estimate its depth. The average cover soil thickness according to the borehole depth data suggested that the minimum thickness requirement was met.

5. Summary and Recommendations

5.1 Summary

The ECDSWM contracted ATR, Inc. (contractor) in September 2009 to mine a portion of the landfill to reclaim land for future lined cell construction. From December 2009 through October 2011, approximately 485,120 in-place yd^3 of waste materials and final cover soil deposited in 16.9 acres of unlined cells were mined. The excavated waste was typically screened to recover soil-like material for use as a daily cover soil for the active landfilling operation at the site. Screened waste was deposited in the active lined cell at the site (Section 4). The waste excavated from 9 May 2011 through 24 August 2011 was relocated without screening to the western slope of the lined cells in order to grade the slope for the construction of a new access road. The in-place volumes of different waste constituents were estimated using the routinely collected topographic survey data and the truckload number data reported by the contractor on daily reports. The major findings of the report are summarized as follows:

1. Final cover soil constituted approximately 34% of the overall airspace mined; the final cover soil volume was estimated based on the area mined and the average thickness, which in turn was estimated by excavating more than 30 test pits before the start of the project.
2. The excavated waste was screened to segregate soil like material from the waste materials (screened waste, whole tires) using a 3-inch opening size trommel screen. The volume of waste materials and reclaimed soil was estimated by deducting the final cover soil volume from the overall volume excavated, which in turn was estimated based on routine topographic surveys. The in-place volume of the individual constituents (screened waste, reclaimed soil, whole tires) was estimated by distributing the in-place volume of the excavated waste into individual constituents in the same proportion as the truckload numbers. Reclaimed soil represented approximately 28% of the overall airspace mined.
3. The beneficial use of the recovered final cover soil and the reclaimed soil resulted in net airspace recovery of approximately 301,700 yd^3, which is worth over $9 million at the current tipping fee and waste compaction density.
4. The cost of mining 485,120 in-place yd^3 of unlined cells was $3.09 million, which is equivalent to $6.37 per in-place yd^3.
5. No hazardous waste or asbestos-containing materials were observed during the project.
6. Approximately 6,035 in-place yd^3 of whole tires were recovered during the project. The tires were segregated and sent off site for management.
7. Siltation of the stormwater pond and leachate sump resulting from the transport of silt with pumped stormwater and leachate (respectively) was a major operational issue encountered during the project.

5.2 Recommendations

The Phase I RFP specification can be used for selecting a contractor for Phase II of the project. The following edits are recommended in the Phase I RFP specifications to address issues encountered during this project:

a. The fourth bullet in section 4-1-1 should be replaced with the following text:

The final in-place cover soil volume shall be determined by either of the following approaches:

1. *The contractor shall mobilize appropriate equipment resources to excavate at least 2 test pits or boreholes per acre to estimate the final cover depth in the mining area before the start of the project. The in-place final cover soil volume shall be calculated by multiplying the mining area with the average final cover depth. The location of the test pits or boreholes shall be determined by ECDSWM.*
2. *The final cover soil and waste interface shall be surveyed by a surveyor employed by the contractor to quantify the volume of the final cover soil excavated for billing purposes. The contractor shall provide the in-place volume estimate to the ECDSWM based on the survey data. The ECDSWM will immediately notify, in writing, the contractor of any discrepancy. The ECDSWM's project manager will make the final decision.*

b. Because the excavator directly loaded the waste onto the screen and the excavated waste was not transported to the screen for the majority of the project, "transportation" should be deleted from the section 4-1-2 heading.

c. The following text should be added in Section 4-1-14:

The contractor shall prevent the transportation of soil (native or reclaimed) to stormwater ponds along with stormwater. The contractor shall be responsible for cleanup of stormwater ponds and damage to pumps (installed at the ponds) caused by excessive soil transported to the pond along with stormwater from the mining area. The contractor shall be responsible for restoring the drainage layer of the pond per its design in the event its performance is compromised because of blinding of the drainage media or a change in grades.

d. The following text should be added to Section 4-1-19:

The contractor shall be responsible for the mobilization and demobilization of equipment throughout the project due to *changes in the mining strategy to accommodate the site's operation needs. No additional mobilization or demobilization cost shall be added to the contract.*

e. The following text should be added to Section 1-16:

During months when surveys are not available for mined in-place volume estimation, truckload numbers will be used to approximate material volumes for contractor payment. The volume of mined final cover soil over the pay period will be estimated by multiplying the number of final cover soil truckloads by the manufacturer-specified truck capacity (tailgate heaped volume or heaped volume). This number will then be divided by a swell factor of 1.1 to approximate the total in-place volume mined. For all other waste categories besides final cover soil, truckload numbers will be multiplied by the manufacturer-specified truck capacity (tailgate heaped volume or heaped volume) and then divided by a swell factor of 1.6 to approximate the total in-place volume mined. Any time mined quantities are estimated using this method, total mined in-place volumes that are determined based on subsequent surveys will be adjusted by these previous volumes so that all payments are based on surveyed quantities.

6. References

IWCS (2009). Landfill Reclamation Demonstration Project. A report prepared by Innovative Waste Consulting Services, LLC and submitted to Florida Department of Environmental Protection and Escambia County Division of Solid Management http://www.dep.state.fl.us/waste/quick_topics/publications/shw/recycling/InnovativeGrants/IGYear9/finalreport/Perdido_Landfill_Mining_Report_final.pdf.

Jennings, S. (2008). Landfill Waste Mining at Perdido Class I Landfill in Escambia County, Florida. WasteCon 2008, October 19-23, 2008, Tampa, FL.

INTERLOCAL AGREEMENT REGARDING ECUA'S OPERATION OF A TRANSFER STATION

This INTERLOCAL AGREEMENT REGARDING ECUA'S OPERATION OF A TRANSFER STATION (hereinafter "Agreement"), made and entered into as of the _____ day of ______________________, 2020 (hereinafter "Effective Date"), by and between the County of Escambia, a political subdivision of the State of Florida (hereinafter "County"), and the Emerald Coast Utilities Authority, a local governmental body, corporate and politic, which was formed by the Florida Legislature as an independent special district (hereinafter "ECUA")(collectively hereinafter the "Parties"), is as follows:

W I T N E S S E T H:

WHEREAS, pursuant to a Transfer Agreement entered into between the Parties on September 15, 1992, ECUA has plenary authority with respect to the collection of residential solid waste within the unincorporated areas of Escambia County, Florida, as well as the collection of both residential and commercial solid waste on Santa Rosa Island; and

WHEREAS, pursuant to those powers, ECUA collects both residential solid waste and recyclables within the unincorporated areas of Escambia County, Florida, as well as commercial solid waste and recyclables on Santa Rosa Island; and

WHEREAS, pursuant to the 1992 Transfer Agreement, ch. 2001-324, Laws of Florida and the permanent injunction entered by Judge Frank Bell on February 28, 1995, ("Injunction") the ECUA is required to obtain authorization from the Escambia County Board of County Commissioners in order to provide, operate or maintain a solid waste disposal or resource recovery facility; and

WHEREAS, ECUA believes it could more efficiently collect solid waste if it were to construct, own, and operate a Transfer Station conveniently located in Escambia County, Florida, where ECUA's collection vehicles could transload their contents into larger vehicles for transportation to the Perdido Landfill, or such other facility designated by the County but which is located within Escambia County, Florida, thereby enabling ECUA's collection vehicles to spend more time collecting solid waste curbside; and

WHEREAS, ECUA believes it could more efficiently collect recyclables if it were to construct, own, and operate a Transfer Station conveniently located in Escambia County, Florida, where ECUA's collection vehicles could transload their contents into larger vehicles for transportation to its Materials Recovery Facility (MRF), which is also located at the Perdido Landfill, thereby enabling ECUA's collection vehicles to spend more time collecting recyclable materials curbside; and

WHEREAS, ECUA previously filed a petition for declaratory relief, Emerald Coast Utilities Authority v. Escambia County, Florida, Case No. 2011 CA 1602, ("2011 Action") seeking a determination as to whether the ECUA may operate a transfer station for the consolidation of the waste hauling; and

WHEREAS, the County opposed the relief ECUA sought in its Petition and filed a counterclaim against ECUA claiming such a Transfer Station would constitute a solid waste disposal system, which, by virtue of Judge Bell's permanent injunction, Escambia County Board of County Commissioners has exclusive rights to own and operate; and

WHEREAS, the Parties have agreed to resolve their dispute without further litigation and to voluntarily dismiss the claims and the 2011 Action on the terms and conditions set forth herein;

NOW, THEREFORE, in consideration of the mutual promises and covenants contained in this Agreement, and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the Parties agree as follows:

1. Recitals. The above recitals are true and correct and are incorporated in this Agreement as if fully set forth herein.

2. ECUA to Construct, Own, and Operate a Transfer Station. The County hereby authorizes ECUA to build, own and operate one (1) Transfer Station at or about 6722 Pine Forest Road within Escambia County, Florida, subject to applicable zoning and land use regulations, in order for ECUA to increase the efficiencies of its collection operations and save its ratepayers from unnecessary expenses. ECUA shall be responsible for obtaining all necessary permits for the Transfer Station and constructing that Transfer Station. ECUA further agrees and understands that it shall only use Pine Forest Road for ingress and egress to the Transfer Station and ECUA shall provide for sufficient vegetative buffering between the Transfer Station and the surrounding properties consistent with the applicable Land Development Code regulations in effect at the time of plan submittal.

3. ECUA's Operation of its Transfer Station. The Transfer Station will be operated by ECUA or an operator selected by ECUA and ECUA or its operator will abide by County Ordinance 2007-39, the flow control ordinance so long as it remains valid and effective. At the Transfer Station, loads from ECUA's collection vehicles will be transloaded into larger vehicles for the more efficient transportation of solid waste to the Perdido Landfill, or such other facility designated by the County which lies within Escambia County, as well as the more efficient transportation of recyclable materials to ECUA's MRF.Additionally, the County may deliver to the Transfer Station litter and other solid waste collected by inmate labor crews. Only solid waste and recyclables lawfully collected by ECUA or the County shall be accepted at the Transfer Station, and ECUA shall not service third parties at its Transfer Station without further approval of the County. Solid waste delivered by the County to the Transfer Station shall be accepted and weighed by ECUA. A monthly report will be submitted by ECUA to the County reflecting the weight of the materials delivered to the Transfer Station by the County, and the County shall issue ECUA a credit for all disposal charges attributable to the County's deliveries to the Transfer Station. Although ECUA may not engage in solid waste disposal or processing activities at the Transfer Station absent further approval of the County, ECUA

or its operator may remove visibly present prohibited materials[1] from loads received at the Transfer Station.

ECUA further agrees to restrict hours of operation at the Transfer Station to solely between 6 a.m. and 6 p.m., unless other hours of operation have been agreed to by a majority vote of the Board of County Commissioners. Addisionally, ECUA agrees to operate in compliance with all applicatble regulatory ordinances enacted by the Escambia County Board of County Commissioners, including any ordinance enacted subsequent to the effective date of this Interlocal Agreement.

4. Transferability. The authority and permissions granted by this Interlocal Agreement are not transferable. Any sale or conveyance of the Transfer Station shall void this Interlocal Agreement and any other owner shall not have authority to operate a transfer station by means of this Interlocal Agreement.

5. Notice and Contact.

(a) All notices provided under or pursuant to this Agreement shall be in writing, either by hand or mail, to the representatives named below, at the address below:

(b) Name and contact information of the County's project Manager:

Pat Johnson, Director, Waste Services
Escambia County Perdido Landfill
13009 Beulah Road
Cantonment, Florida 32534
Telephone: (850) 937-2160

(c) Name and contact information of ECUA's project manager:

Randy Rudd, Deputy Executive Director of Shared Services
9255 Sturdevant Street
Pensacola, Florida 32514
Telephone: (850)-969-3393

(d) In the event that different representatives or addresses are designated by either Party after execution of this Agreement, notice of the name, title, address, and telephone number of the new representative will be provided as outlined in paragraph 4(a), above.

6. Records. The Parties acknowledge that this Agreement and any related financial records, audits, reports, plans, correspondence, and other documents may be subject to disclosure to members of the public pursuant to Chapter 119, Florida Statutes, as amended. In the event a Party fails to abide by the provisions of Chapter 119, Florida

[1] The term "prohibited materials" shall refer to those materials which cannot lawfully be disposed of at the Perdido Landfill or such other facility designated by County, such as tires.

Statutes, the other Party shall give the first party written notice of the alleged violation of Chapter 119 and sever (7) calendar days to cure the alleged violation. If the alleged violation has not been cured at the end of the time period, then the first Party may terminate this Agreement for cause.

7. Liability. Subject to any claim of sovereign immunity, each Party to this Agreement shall be fully liable for the acts and omissions of its respective employees and agents in the performance of this Agreement to the extent permitted by law. Furthermore, nothing in this Agreement nor any act of the Parties shall be deemed or construed by the Parties hereto or by any third party to create a relationship of principal and agent, joint venture, business affiliation, or any association whatsoever between ECUA and the County.

8. Choice of Law; Venue. This Agreement and the interpretation and performance thereof shall be governed by the laws of the State of Florida, and any action arising out of or related to this Agreement shall be brought only in a court of appropriate jurisdiction in Escambia County, Florida.

9. Force Majeure. "Force Majeure" means an event beyond the reasonable control of the Party, which prevents such Party from performing any of its obligations under this Agreement, including: (a) acts of God (such as earthquakes, hurricanes, floods, and abnormal weather); (b) fires or explosions; (c) war, hostilities (whether war is declared or not), invasion, act of foreign enemies, mobilization, requisition or embargo; (d) riot, rebellion, revolution, insurrection, military or usurped power or civil war; (e) labor disputes involving strikes, slowdowns, lockouts, or disorder; or (f) governmental restrictions or inability to obtain necessary permits or materials. If a delay of performance occurs due to an event of Force Majeure, the period for performance shall be extended for a time equal to the time lost because of the Force Majeure, but only if the affected Party gives prompt notice to the other Party of the occurrence causing the delay and acts in good faith and uses due diligence to perform to the extent performance is not prevented by the event of Force Majeure. To the extent practicable, the affected Party shall use commercially reasonable efforts to mitigate the effects of such event of Force Majeure on its obligations under this Agreement.

10. No Third-Party Beneficiaries. Except as expressly provided herein, this Agreement is entered into for the sole and exclusive benefit of the Parties and will not be interpreted in such a manner as to give rise to or create any right of benefits of or for any person not a Party hereto.

11. Severability. The invalidity or non-enforceability of any portion or provision of this Agreement shall not affect the validity or enforceability of any other portion or provision. Any invalid or unenforceable portion or provision shall be deemed severed from this Agreement, and the balance of this Agreement shall be construed and enforced as if this Agreement did not contain such invalid or unenforceable portion or provision.12. No Waiver. The failure of a Party to insist upon the strict performance of the terms and conditions of this Agreement shall not constitute or be construed as a waiver or relinquishment of any other provision or of either Party's right thereafter to enforce the

same provision in accordance with this Agreement.

13. Dispute Resolution. The Parties agree that in the event of any dispute or claim relating to, arising out of, or interpreting this Agreement arises, all such disputes or claims shall be fully, finally, and exclusively decided by a State or Federal court of competent jurisdiction sitting in Escambia County, Florida. Additionally, the Parties knowingly and willingly hereby waive their respective rights to have any such disputes or claims decided by a jury; instead, their sole relief shall be via a bench trial in which the judge alone sits as the finder of fact.

14. Amendment. This Agreement may be amended only by a written agreement signed by an authorized representative of each Party.

15. Authority to Contract. Each individual executing this Agreement on behalf of a Party represents and warrants that he is duly authorized to execute and deliver this Agreement on behalf of said entity, in accordance ·with applicable law, and that this Agreement is binding upon said entities in accordance with its terms.

16. Dismissal of Lawsuit. Upon approval and execution of this Agreement, the parties shall stipulate to the dismissal of ECUA's petition for declaratory relief and the County's counterclaim in the case styled Emerald Coast Utilities Authority v. Escambia County, Florida, Case No. 2011 CA 1602, with each party bearing its own fees and costs.

17. Further Assurance. The Parties agree to execute, acknowledge and deliver and cause to be done, executed, acknowledged and delivered all such further documents and perform such acts as shall reasonably be requested of it in order to carry out this Agreement and give effect hereto. Accordingly, without in any manner limiting the specific rights and obligations set forth in this Agreement, the Parties declare their intention to cooperate with each other in effecting the terms of this Agreement.

18. Interpretation. For the purpose of this Agreement, the singular includes the plural and the plural shall include the singular. References to statutes or regulations include all statutory or regulatory provisions consolidating, amending, or replacing the statute or regulation referred to. Words not otherwise defined that have well-known technical or industry meanings are used in accordance with such recognized meanings. References to persons include their respective permitted successors and assigns and, in the case of governmental persons, persons succeeding to their respective functions and capacities, and the terms, conditions, and obligations contained in this Agreement shall be binding on each party's successors and assigns.

(a) If any Party discovers any material discrepancy, deficiency, ambiguity, error, or omission in this Agreement, or is otherwise in doubt as to the meaning of any provision of the Agreement, the Party shall immediately notify all other Parties and request clarification of this Agreement.

(b) This Agreement shall not be more strictly construed against any Party hereto by reason of the fact that one Party may have drafted or prepared any or all of the terms and provisions hereof.

(c) This Agreement shall not be interpreted to conflict with any existing agreement between the Parties governing the collection and processing of recyclables.

19. ‘Effective Date. This Agreement, after being properly executed by the Parties, shall become effective upon filing with the Clerk of the Circuit Court of Escambia County, and shall continue for twenty (20) years from the effective date unless extended by agreement of the parties as provided herein. The County shall be responsible for such filing.

IN WITNESS WHEREOF, the Parties have executed this Agreement, by and through their duly undersigned representative, as of the date and year first written above.

EMERALD COAST UTILITIES AUTHORITY a local governmental body, corporate and politic.

By: ______________________________
J. Bruce Woody, Executive Director

Date: ______________________________

ATTEST:

By: ___________________________
Secretary

ESCAMBIA COUNTY, FLORIDA, a political subdivision of the State of Florida acting by and through its duly authorized Board of County Commissioners.

By: ______________________________
Steven Barry, Chairman

Date: ______________________________

ATTEST: Pam Childers
Clerk of the Circuit Court

By: ___________________________
Deputy Clerk

(SEAL)

BCC Approved: ________________

Committee of the Whole **4.**

Meeting Date: 05/14/2020

Issue: Tiny Homes Guidance

From: Tim Tolbert, Building Official/Department Director

Information

Recommendation:

Tiny Homes Guidance
(Horace Jones/Tim Tolbert - 30 min)
A. Board Discussion
B. Board Direction

Attachments

Tiny House Construction Regulation

Tiny House Construction

TWO ISSUES:

- CONSTRUCTION STANDARDS
- LAND USE

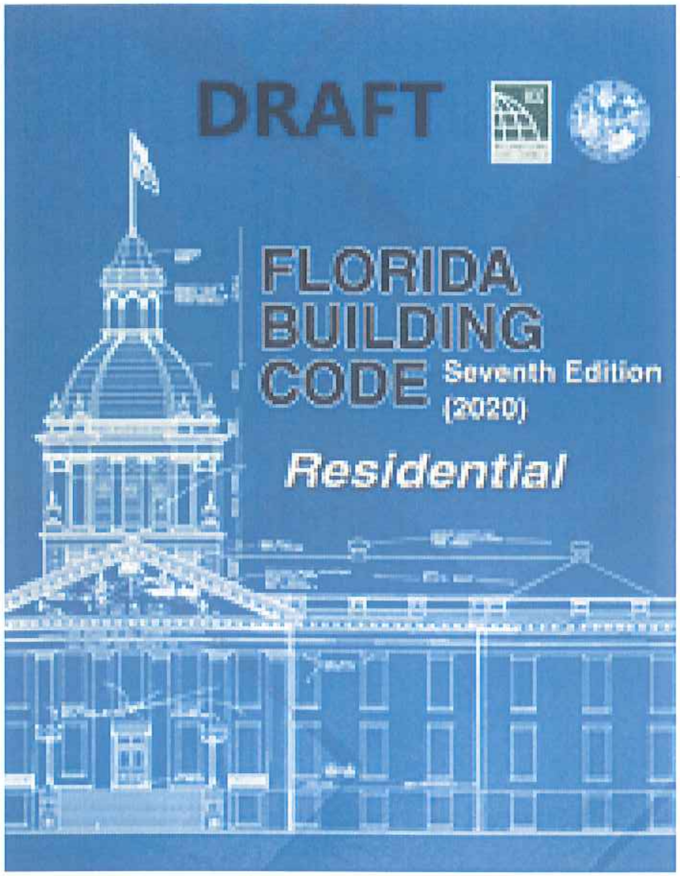
SEEKING:

- DIRECTION ON MOVING FORWARD ON ADOPTION OF APPENDIX Q (FBCR)

Tiny House Construction Regulation

AVAILABLE STANDARDS FOR CONSTRUCTING A TINY HOME IN ESCAMBIA COUNTY

- CURRENTLY: FLORIDA BUILDING CODE RESIDENTIAL (FBCR)
- UPCOMING: APPENDIX Q TINY HOUSE REQUIREMENTS IF ADOPTED



Tiny House Construction Regulation

- Appendix Q is contained within the upcoming 7th edition (2020) Florida Building Code Residential (FBCR). Effective date 12/31/2020
- To be considered a Tiny House the floor area cannot be over 400 square feet. A larger home must meet normal building code standards
- The intent of appendix Q is to provide some relief from more stringent requirements found in the (FBCR), e.g. ceiling heights, individual room areas, stair requirements, etc.
- Appendix Q must be adopted by the jurisdiction for enforcement. FBC 101.2.1

If Appendix **Q is adopted in the Building Code by the BCC,** all the provisions and regulations of the current Land Development Code (LDC) applies. It will allow for these types of structures:

- In all zoning districts - **as a single-family dwelling per lot of record as of February 8, 1996**
- As an accessory dwelling unit where a single-family dwelling unit exists
- Without a site plan review, up to 4 units in all zoning districts where multi-family dwellings and/or multi-developments are allowed
- Under the LDC, tiny houses cannot be recreational vehicles such as travel/camping trailers, motor homes, private motor coaches, fifth-wheel trailers, or park models

Zoning Chart with LDC Definitions

ZONING CATEGORIES	ACCESSORY DWELLING UNITS
AGR- SINGLE FAMILY	YES
RR- SINGLE FAMILY	YES
RMU- SINGLE FAMILY	YES
LDR- SINGLE FAMILY	YES
LDMU- SINGLE FAMILY	YES
MDR- SINGLE FAMILY	YES
HDR- SINGLE FAMILY	YES
HDMU- SINGLE FAMILY	YES
COM- SINGLE FAMILY	YES
HC/LI- SINGLE FAMILY PREDOMINANT COMMERCIAL	YES
IND- SINGLE FAMILY	NO
REC- SINGLE FAMILY	NO
CON- SINGLE FAMILY	NO
PUB- SINGLE FAMILY	NO

LDMU- TWO FAMILY & MULTI-FAMILY

HDR- TWO FAMILY & MULTI-FAMILY

HDMU- TWO FAMILY & MULTI-FAMILY

COM- TWO FAMILY& MULTI-FAMILY

HC/LI- SINGLE FAMILY PREDOMINANT COMMERCIAL

- ***Multi-family dwelling***. A building that contains three or more dwelling units in any arrangement, including triplex and quadruplex building forms and apartment and condominium forms of tenancy and ownership.

- ***Development, single-family***. Development in which only one single-family dwelling is allowed per lot, attached or detached, except where an accessory dwelling unit is allowed with the principal single-family dwelling.

- ***Development, multi-family***. Development in which any combination of single-family, two-family, or multi-family dwellings provide three or more dwelling units on a single lot.

Committee of the Whole **5.**

Meeting Date: 05/14/2020

Issue: OLF-8 Master Plan Kickoff

From: Chips Kirschenfeld, Director

Information

Recommendation:

OLF-8 Master Plan Kickoff

(Chips Kirschenfeld/Terri Berry - 30 min)

A. Board Discussion

B. Board Direction

Attachments

OLF-8 Master Plan Kickoff

Kick-Off Presentation to Board of County Commissioners

May 14, 2020

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IMPACT CAMPAIGNS | WEITZMAN | URBAN 3 | NELSON / NYGAARD | GIT CONSULTING | SPECK & ASSOCIATES

Project Coordinator
Natural Resources Management Department

Division Manager
Natural Resources Management Department

Senior Planner
Development Services Department

County Team

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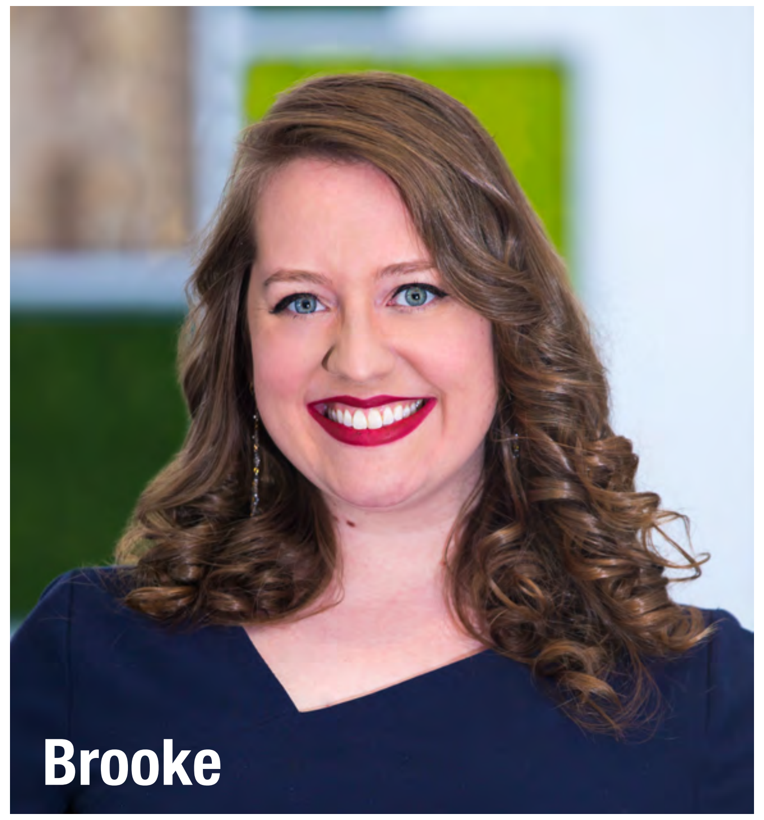
DPZ CoDesign

Project Management, Master Planning & Urban Design

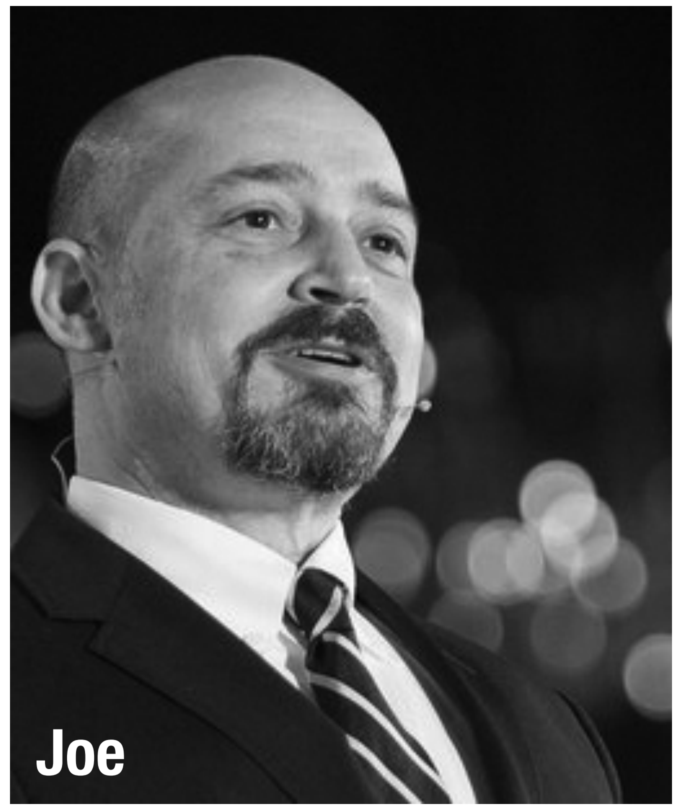


Impact Campaign

Stakeholder Engagement

Weitzman Associates

Residential & Commercial Market Studies

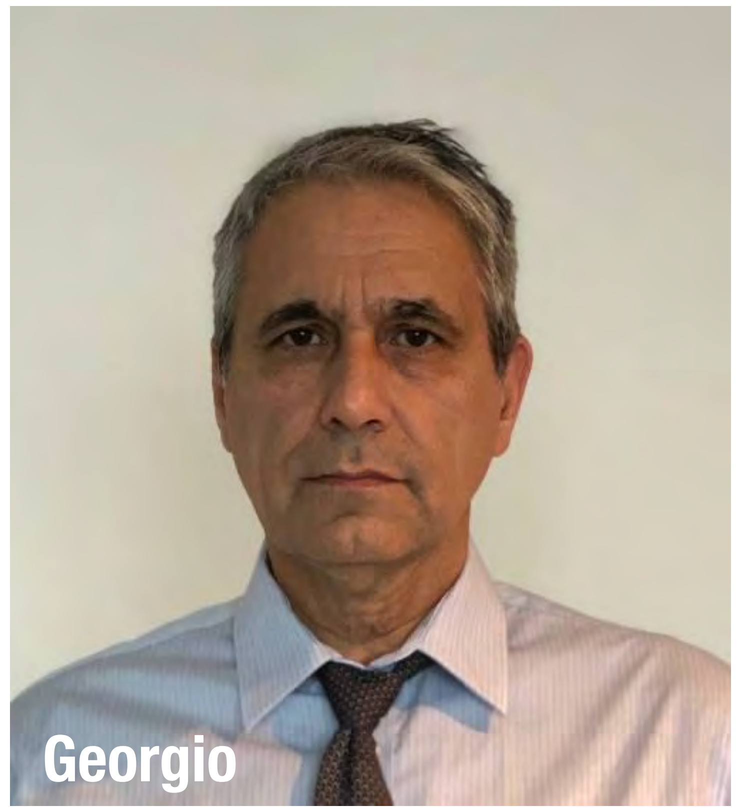


Urban 3

Economic Impact Analysis

Nelson\Nygaard Consulting

Transportation Analysis & Planning



GIT Consulting

Environmental Infrastructure Analysis & Civil Engineering

Speck & Associates

Walkability Advisor

DPZ Team

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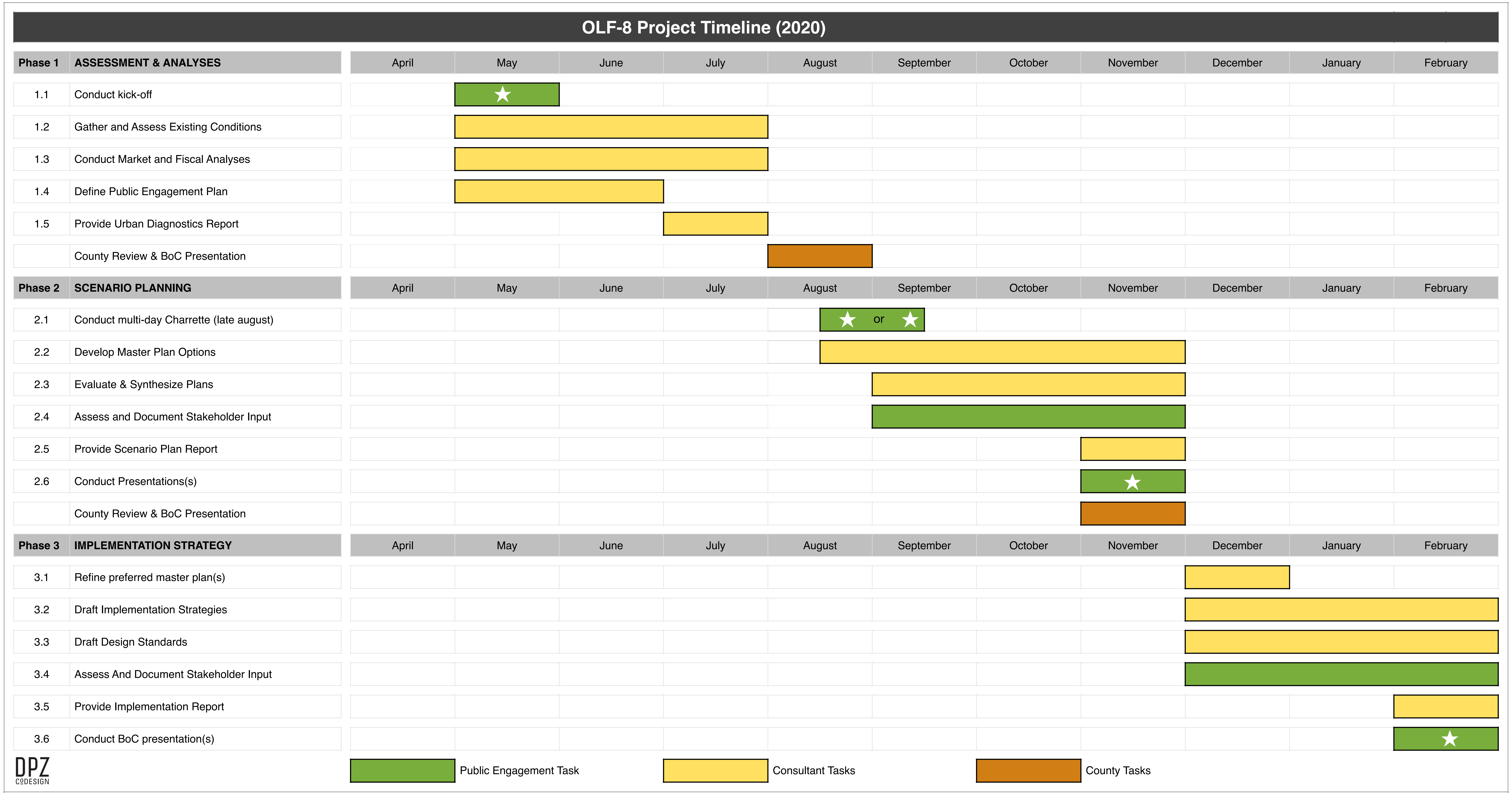

Note: If County review time exceeds allocated timeframe shown here, the schedule will adjust accordingly for the same amount of time exceeded by the County.

Project Tasks & Timeline

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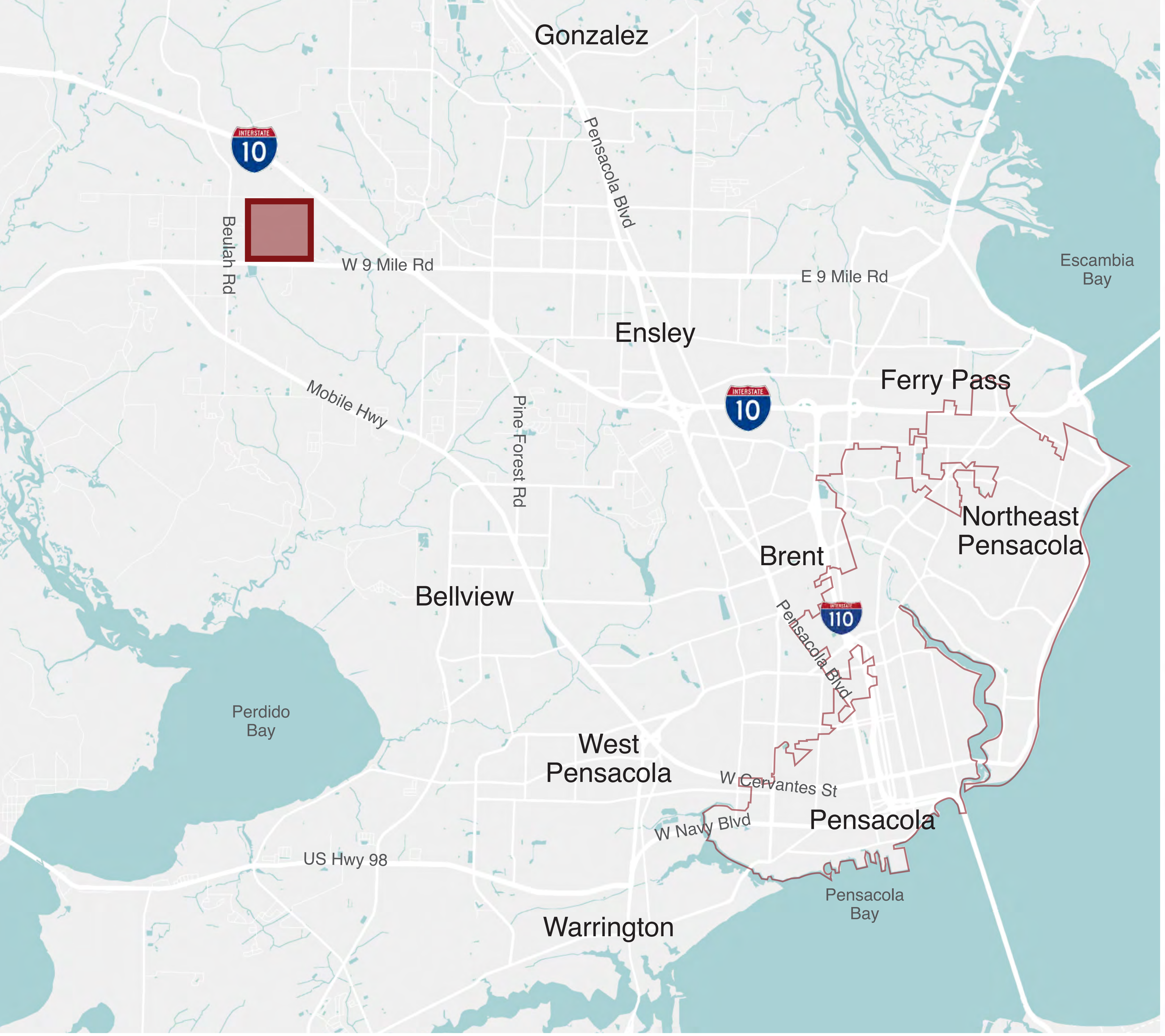


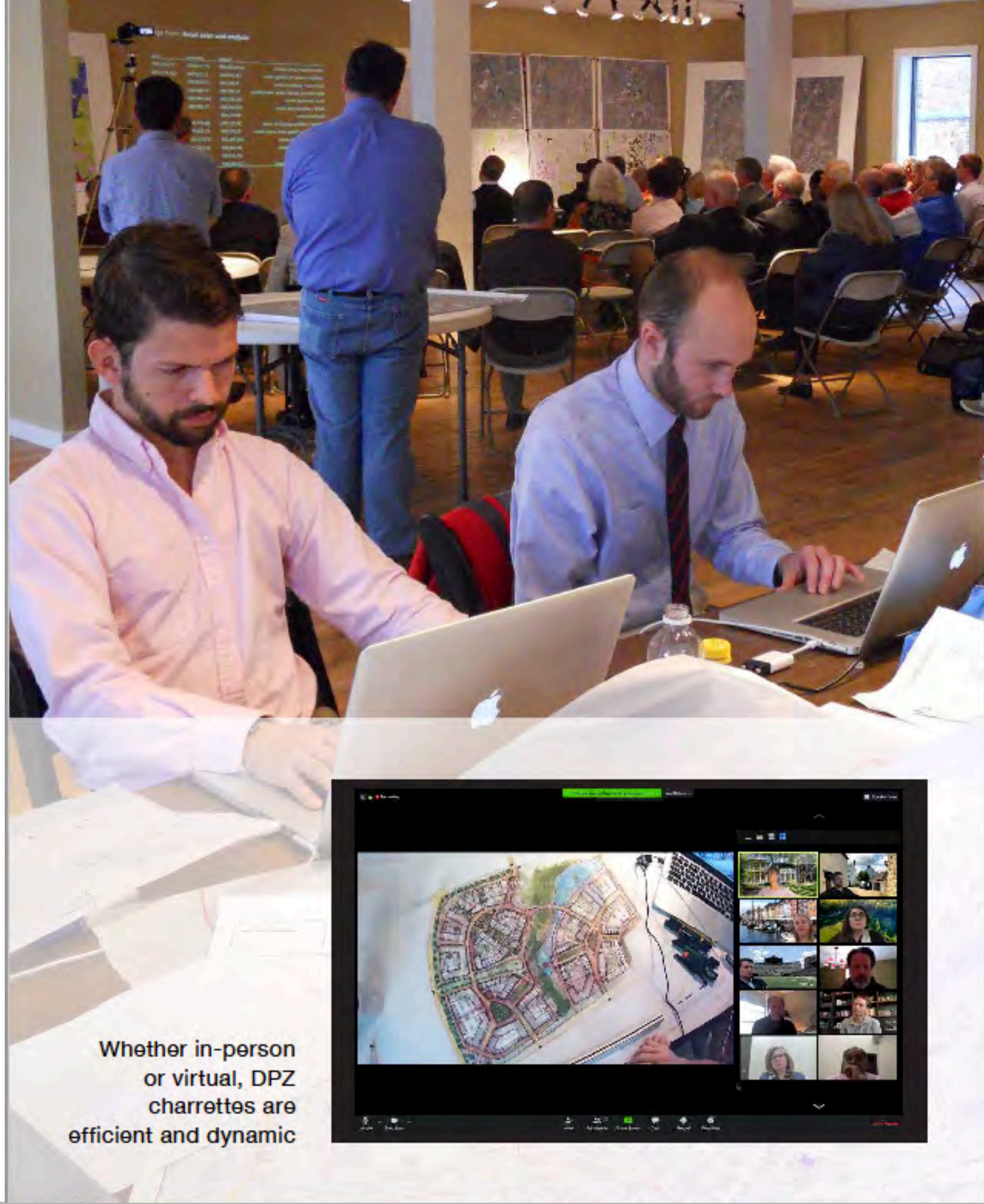
Context | Identity | Opportunities | Aspirations | Needs | Limitations | Competitive Edge

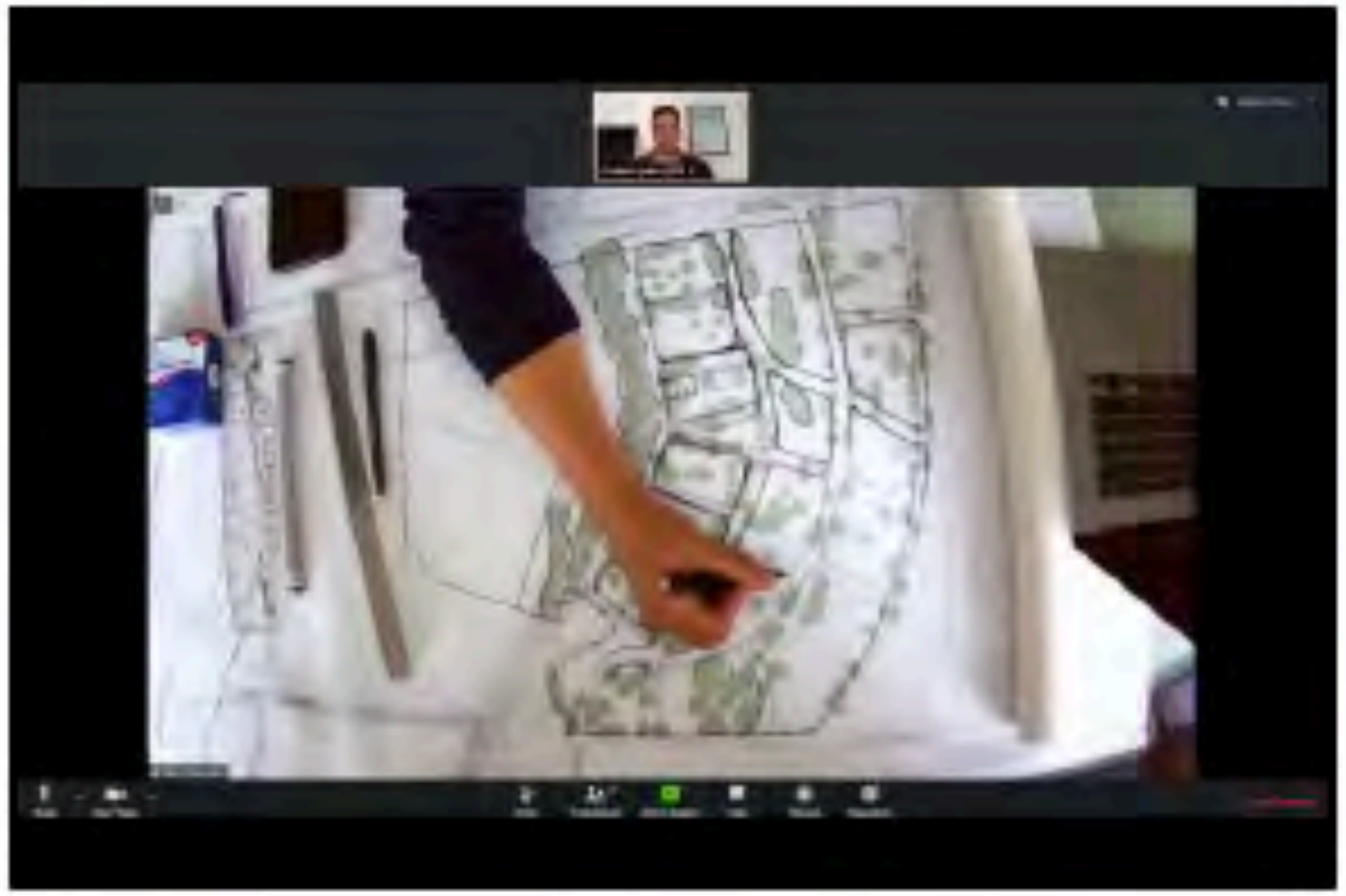
I. **Introduction and COVID-19 impact**

II. **Public Engagement Goals**
- Educate public about project opportunities;
- Engage widely with citizens and stakeholders in the planning and design process;
- Ensure transparency, engagement and alignment;
- Evaluate public sentiment and quantify feedback on project deliverables.

III. **Engagement Strategy**
- Be nimble and flexible based on current conditions;
- Be clear on engagement expectations and rules of engagement;
- Create online digital platform to engage public broadly;
- Be creative with non-digital outreach;
- Maintain momentum throughout project duration and consider remote Charrette

IV. **Ongoing Communication and Engagement**
- Narrate the process;
- Integrate with other communication and engagement tools;
- Provide multiple ways of engaging & providing ongoing feedback.





- **Virtual Charrette may include:**
  - Virtual and in-person meetings;
  - Topical team work sessions;
  - Stakeholder interviews;
  - Interactive planning and design reviews;
  - Live cameras on designers;
  - Presentations;
  - On-going community online engagement and feedback.

Virtual Charrette

OLF-8 Kick-Off SCHEDULE

Week of: **May 20**

(CDT)	5/20 WEDNESDAY	5/21 THURSDAY
8:00 AM		
8:30 AM		
9:00 AM		
9:30 AM		
10:00 AM	**Team Introduction**	
10:30 AM		**Topic 3 Meeting** (Transportation)
11:00 AM	**Review of Scope & Timeline**	
11:30 AM		
12:00 PM	*lunch break*	*lunch break*
12:30 PM		
1:00 PM	**Topic 1 Meeting** (Market Analysis)	**Topic 4 Meeting.** (Public Outreach)
1:30 PM		
2:00 PM		
2:30 PM	*break*	*break*
3:00 PM	**Topic 2 Meeting** (Environmental & Infrastructure)	**Topic 5 Meeting.** (Planning, Zoning & Land Use)
3:30 PM		
4:00 PM		
4:30 PM		**Wrap-up**
5:00 PM		
5:30 PM		
6:00 PM		
6:30 PM		

- **Remote technical kick-off meeting**
  - Project goals and objectives;
  - Project schedule and management protocols’
  - Community engagement strategies plan;
  - Project history and prior /ongoing planning efforts
  - Project site, opportunities and constraints;
  - Development program and market demand;
  - Zoning and FLU with goal to select entitlement strategy;
  - Data collation and existing conditions analysis;
  - Schedule first public presentation

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- **Summer - Site visit, in person**

Next Steps for Phase 1: Kick-Off Meeting

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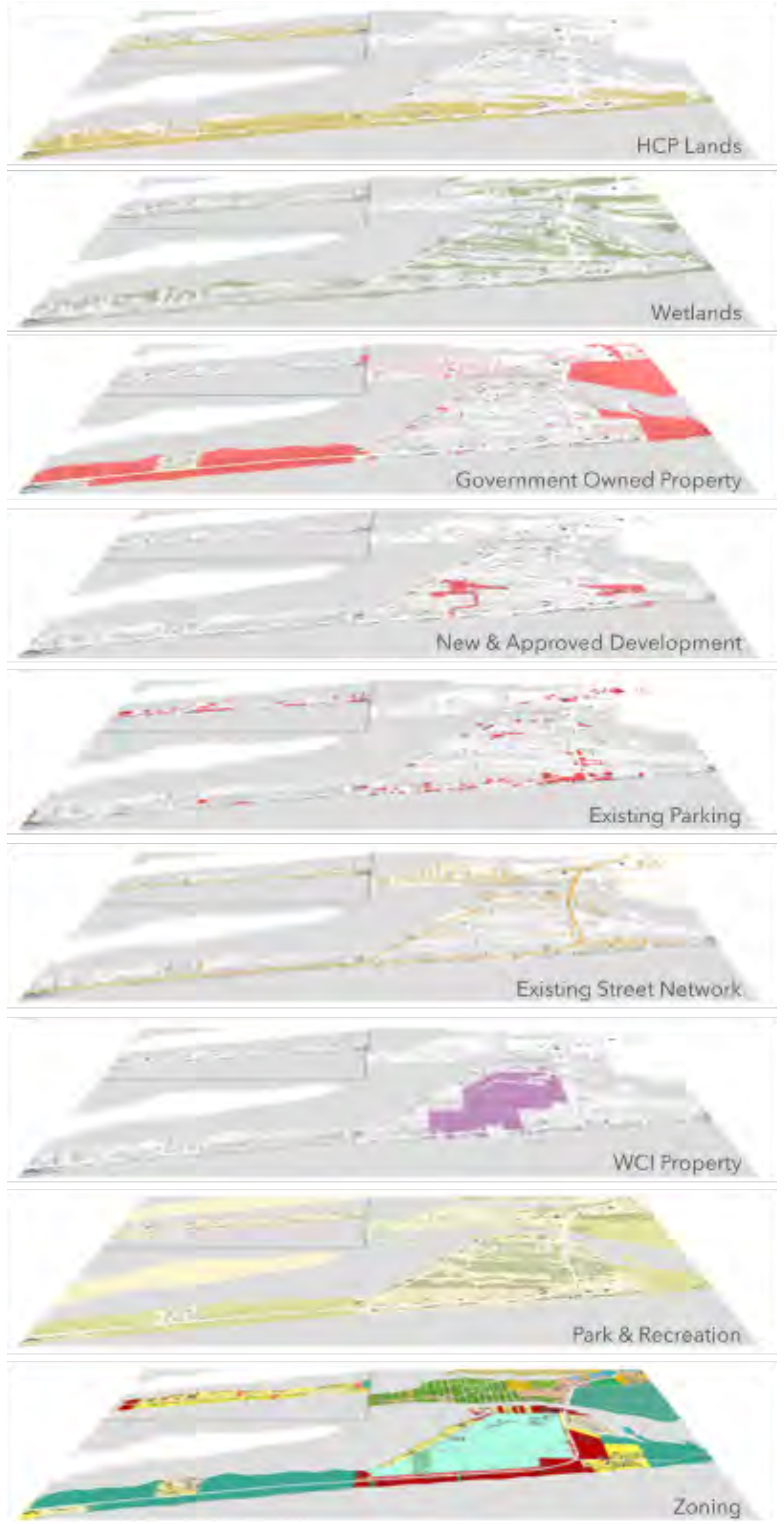

- **Task 1.2: Existing Conditions |Technical Analyses**
  - Character, Land Use and Zoning Analysis
  - Environmental & Civil Analysis
  - Infrastructure Analysis
  - Transportation Analysis
- **Task 1.3: Market & Fiscal Analyses**
  - Economic Impact Analysis
  - Fiscal Health Analysis
- **Task 1.4: Define Community Engagement Plan**
- **Task 1.4: Provide Urban Diagnostic Report**
- **Task 1.5: County Review and BoC Presentation**

Next Steps for Phase 1: May - August

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1. Preferences on community engagement strategy

2. Extent of virtual charrette & online platform

3. Identification of key stakeholders

4. Frequency of Board updates

5. Rezoning timing and strategy


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